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ABSTRACT

This report reviews activities of phase two of a research project with the general objective of developing methodology to better assess the needs of vocational-technical education in urban areas, and specific objectives of refining the methodology developed in phase one for the Jacksonville, Florida, labor market and extending the methodology and insuring its generality by applying the procedures to the Tampa-St. Petersburg urban area. An introductory section presents the purpose of phase one, an overview of its findings, and the objectives, methodology, and organization of phase two. Chapter 2 presents the general philosophy and limitations of needs assessments, and outlines the methodology used in this study. Chapter 3 provides a general economic and demographic analysis of the Tampa Bay Area. Chapter 4 reports on the methodology for making occupation forecasts for urban areas. Chapter 5 analyzes the vocational education delivery system and its interface with the job market. Chapter 6 presents conclusions on needs assessments for urban areas and seven major recommendations from the two studies. An appendix contains materials from a business/industry-vocational education workshop, a selected bibliography, and outlines of a needs assessment and field work methodologies. (BL)

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# METHODOLOGY FOR DETERMINING NEEDS FOR VOCATIONAL AND TECHNICAL EDUCATION IN URBAN AREAS IN FLORIDA: A SECOND LOOK

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October 4, 1977

Dr. Raymond O. Shelton, Chairman
Florida State Advisory Council
on Vocational Education
W. V. Knott Building
Tallahassee, FL 32304

Dear Dr. Shelton:

This document is submitted as a report of a project conducted for the Florida State Advisory Council on Vocational and Technical Education. The report represents the second phase of the development of a methodology for determining the needs for vocational and technical education in Florida.

It is our hope that this report will be helpful to all who are concerned with strengthening Florida's vocational programs, services, and activities.

Sincerely,

Henry H. Fishkind
Assistant Professor

Jerome W. Milliman
Professor

HHF/JWM/eaf

Enclosure



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October, 1977

# Methodology for Determining Needs for Vocational and Technical Education in Urban Areas in Florida: A Second Look

by

Henry H. Fishkind
Jerome W. Milliman
Rafael J. Betancourt

The project (continuation of Project No. 6-6002) herein was conducted for the Florida State Advisory Council on Vocational Technical Education pursuant to a grant administered by the Florida Department of Education. Contractors undertaking such projects are encouraged to express freely their professional opinions in the conduct of the project. Points of view or opinions stated do not, necessarily, represent the official position or policy of the Florida Department of Education or the Florida State Advisory Council.

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Second, we wish to acknowledge the contributions to the Phase One and Phase Two reports from the vocational education administrators in the Jacksonville and in the Tampa Bay area labor markets. Conservatively we are indebted to over thirty educators who gave generously of their time. These persons did much to improve the results of our field work.

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Introduction

1.1. Purpose of the study

1.2. Overview of earlier findings

1.3. Objectives of the study

1.4. Methodology of the study

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1.5. Organization of the study

# Chapter 1

# Introduction

## 1.1. Purpose of the Study

This study was commissioned by the Florida State Advisory Council on Vocational and Technical Education. Its purpose is to develop and test methodology for determining the needs for vocational and technical education (VTE) in urban areas in Florida.

The research described in this report is a continuation of a project which was initiated in January, 1976. The Phase One report was presented in September, 1976. Funding for the continuation was approved for the period January 1, 1977 through September 30, 1977.

Previous studies of VTE have either had too broad a focus and utilized state and national data, or they have had too narrow a focus and required a county or a city school system as their study area. As a result, these studies have not adequately assessed the needs for VTE within a functional labor market area using a metropolitan outlook. In assessing needs for VTE in urban areas initial focus should be on the regional labor market often comprising several counties.

## 1.2. Overview of Earlier Findings

The Phase One report is entitled, Methodology for Determining Needs for Vocational and Technical Education in Urban Areas in Florida (September, 1976) by Henry H. Fishkind, Jerome W. Milliman and Richard W. Ellson of the Bureau of Economic and Business Research, University of Florida, Gainesville, Florida 32611.

In the Phase One report, a five-part approach to methodology was developed: (1) set forth on overall economic analysis of the urban region and its potential for economic and population growth, (2) develop and test alternative procedures for projecting the demand for labor by occupation for a given area, (3) develop and test methodology for projecting the supply of labor by occupation for an urban labor market,

(4) develop procedures for meshing forecasts of occupational demand and supply, so that prospective shortages and surpluses of manpower can be readily identified, and (5) conduct extensive field surveys of VTE programs, facilities, students, teachers and administrators. The methodology was tested in the Jacksonville (Florida) labor market area, and the study area was State Planning Region Four in Northeast Florida comprising seven counties: Duval, Nassau, Baker, Clay, St. Johns, Flagler, and Putnam. In 1975, this area contained 757,800 people and comprised 8.9 percent of Florida's population.

The major findings from the Phase One study are:

(1) Accurate manpower information for urban areas in Florida is needed. Confusion exists as to the meaning and proper use of manpower data by VTE administrators, guidance counselors, faculty, students and business groups.

(2) Three techniques for projection of the future expansion demand for labor - time trend, shift-share, and econometric - were evaluated. All techniques provided reasonable projections. However, the econometric technique was selected as the preferred one because it is the most flexible in simulating alternative futures and because it is causally based.

(3) For supply forecasting by occupation a variation of the shift-share technique was developed. The technique, being used for the first time, was judged to be promising and low cost. However, further testing and evaluation was needed.

(4) Both the occupational demand and supply projections used the Occupational Information Delivery System (OIDS) developed by Tarr and Campbell (1975). The preliminary results indicate that the OIDS System is a valuable tool for labor market analysis which can be used at the metropolitan level.

(5) After meshing the occupational supply and demand forecasts, a BLS crosswalk was used to translate the occupational projections into VTE program codes. This was the first time that such detailed occupational projections were related to VTE programs in a comprehensive fashion. However, it was recognized that the overlap between VTE program codes and the OIDS System was not complete and that more study appeared warranted.

(6) The most important conclusion from the field work was the existence of unevenness among VTE programs within Region Four. Average costs per student in the same program varied greatly from county to county. Small VTE programs had higher costs and limited program diversity. Regional coordination and planning based upon community college districts was not consistent with a labor market wide approach. Moreover, there appeared to be scope for improving the planning process between state and local VTE administrators.

Although the results of the Phase One study appeared promising, the application of the methodology to other urban areas was recommended. Some technical weaknesses of the study were identified, e.g. estimation of replacement demands, estimation of occupational supplies and the crosswalking between the OIDS System and VTE program codes. In addition, adequate assessment was not made of the needs of business and industry or of handicapped students.

## 1.3. Objectives of the Study

After the 1976 study was reviewed by the Florida State Advisory Council on Vocational and Technical Education it was decided to continue the project for the period January 1, 1977 to September 30, 1977. The general objective is to develop methodology to better assess the needs for VTE in urban areas in Florida.

The specific objectives of the Phase Two study are:

(1) Refine the methodology developed in Phase One for the Jacksonville labor market. Specifically to hold a conference between VTE administrators and personnel managers to better assess business needs for VTE, to improve the econometric model, to refine the occupational supply forecasts, to improve crosswalk procedures, to solicit suggestions for improvement of the previous research, and to evaluate needs of the handicapped.

(2) Extend the methodology and insure its generality by applying the procedures to the Tampa-St. Petersburg urban area. The application to another urban area provides the opportunity for further testing and evaluation. Moreover, with needs assessments conducted in two different urban areas common strengths and weaknesses can be identified. We test the procedures in the Tampa Bay area composed of Manatee, Hillsborough, Pasco and Pinellas counties - an economic region centered around Tampa and St. Petersburg.

## 1.4. Methodology of the Study

Our approach to needs assessment for urban labor market areas may be divided in two parts: (1) labor market analysis and manpower projections and (2) analysis of the operation and performance of the VTE delivery system.

### 1.4.1. Labor Market Analysis and Manpower Projections

Need assessments for urban areas should begin with a detailed labor market analysis and accurate manpower projections which are developed (and kept current) for each major urban area (SMSA). Our approach to the development of manpower projections involves the following steps:

(a) Develop a general economic analysis of the region and its potential for economic and population growth. This should be done at least on an annual basis. It should be done before a detailed manpower analysis is undertaken. It is important that the region selected be a coherent economic labor market. Usually this will be a Census defined Standard Metropolitan Statistical Area (SMSA) comprising several counties and an urban area of at least 50,000 people.

(b) Develop an econometric model capable of forecasting employment and income for the region. Test and calibrate the model so that it can provide accurate economic forecasts for the region. Run the model over sample periods to document its dynamic properties and error characteristics. The documented model can then provide three to five year forecasts of the region's employment and income by detailed industry sectors, and these projections can be updated on an annual basis.

(c) Mesh the occupational forecasts of employment and manpower supply by occupation to determine relative magnitudes of surpluses and shortages. All of the limitations of the requirements approach and the supply projections need to be kept in view.

(d) BLS crosswalk from occupational projections to VTE program categories. This should be done at various levels of occupational aggregation from specific occupations to program clusters. However, it should be recognized that most significance should be attached to the more aggregate clusters.

1.4.2. Analysis of Operations and Performance of the Urban VTE Delivery System

In many ways this is the most important step in the needs assessment. It is the most difficult and most expensive part of the process because a thorough job requires: (a) extensive field work and (b) the commissioning of special studies. It is vital to have first hand knowledge of the planning and operation of the delivery system - especially curricula, teachers, facilities, students, administration,

placement and budgets. Cost information in relation to program outputs seems especially difficult to develop. In addition, it is particularly important to analyze all of the aspects of the interface between the VTE delivery system and the job market. A thorough understanding of the operation of the job market, the structure of industry and the role of union organization is seldom attempted in existing studies of needs for VTE.

Not only is this part of the needs assessment expensive and time-consuming, it is also very politically sensitive. Every interest group in the VTE delivery system and in the interface with the job market has its own "territory" and special point of view. Truly objective studies are difficult to perform because of the "political" forces at work which attempt to protect their vested interests.

1.5. Organization of the Study

This study comprises six chapters. Following the introduction, Chapter 2 presents the methodology for needs assessment we will apply. Chapter 3 develops the general economic outlook for the Tampa-St. Petersburg region. Chapter 4 presents the methodology for making occupation forecasts for urban areas. Chapter 5 analyzes the VTE delivery system and its interface with the job market. Chapter 6 gives our conclusions and recommendations on needs assessments for urban areas in Florida.

The 1976 Education Amendments contain the most comprehensive prescriptions for planning, evaluation and research on vocational education ever formulated by the United States Congress. In light of such a mandate a study of methodology for needs assessment of VTE for urban areas in Florida appears to be particularly timely. State advisory councils can play an important role in fostering the pursuit of research and evaluation documenting the relationships between VTE delivery systems and labor markets. Clearly, more documentation of the relevance

of VTE systems to specific labor markets must focus on urban areas.

Critics of vocational programs often assert that offerings must "satisfy" needs of both the students and the labor markets including the "correct" specialty areas and the "correct" type of training for each. Yet Grasso (1977) suggests that vocational educators also are being criticized for being out of tune with manpower needs as well as being too closely in tune with serving employers at public expense and yet still not meeting other educational objectives. Conflicts in goals and objectives for VTE have been present for many decades and yet have never been fully resolved. Progress in the methodology for the assessment of needs for VTE will be related in part to the resolution of the long standing debates on American educational philosophy.

Outline

Chapter 2

Methodology for Needs Assessment

2.1. Introduction

2.2. Philosophy and limitations of needs assessments

2.3. Methodology of the study

2.4. Labor market analysis and manpower projections

2.4.1. Develop a general economic analysis of the region and its potential for economic and population growth

2.4.2. Develop an econometric model capable of forecasting employment and income for the region

2.4.3. Translate the industry employment forecast into an occupational forecast by use of the OIDS matrix

2.4.4. Mesh the occupational forecasts of employment and manpower supply to determine magnitudes of relative surpluses and shortages

2.4.5. Apply BLS crosswalk to occupational outcomes to obtain "needs" for VTE programs

2.5. Analysis of the VTE delivery system

## Chapter 2

## Methodology for Needs Assessment

### 2.1. Introduction

The purpose of this chapter is two-fold. First, we will discuss the general philosophy and limitations of needs assessments. Second, we will outline the methodology used in this study.

### 2.2. Philosophy and Limitations of Needs Assessments

In the Phase One report we presented a review of the VTE literature on needs assessment. It is clear that the term does not have a specific meaning. Needs assessment appears to be a very general term that applies both to program planning needs and to program evaluation. Precise methodology is not specified and precise questions or a specific structure is not required. Instead, a very general approach to "needs" is taken. For example, what are the needs for VTE programs (existing and new) and facilities; what are the needs of students (including various types of students); what are the needs of business and industry; and what are the needs of teachers and administrators?

The format of needs assessments for VTE usually has two parts though the emphasis on the individual parts may vary a great deal. First, there is usually an attempt to project job openings of various kinds for a future period. Second, there is an effort to describe the VTE delivery system and to outline needs in terms of programs, facilities, equipment and teachers.

A number of observations on the conduct and content of needs assessment seem in order. First, needs can exist when a service renders utility or satisfaction. Yet, "needs" seen in this light are virtually infinite. This means that VTE needs assessments are usually not conceptually bounded either by a heirarchy of priorities or by resource constraints (budgets) to sort out which needs are more important and

which needs have the greatest payoffs relative to real costs. Second, VTE needs in addition to being almost limitless, are not recognized as often being in conflict. Not only can VTE needs mean different things to different groups, the needs of some groups can contravene to the needs of others. For example, the needs of students may be perceived differently by teachers, parents, business firms, taxpayers, and by labor unions. Moreover, when realistic resource constraints are recognized, the use of resources for some kinds of VTE programs must inevitability come at the expense of other programs.

We observe in actual practice that VTE administrators are quite conscious of budget constraints and do recognize that needs have to be weighed and ranked. Yet, the approach in the VTE literature has been to talk about needs in general, vague and unconstrained ways, so that the issues of prioritizing and the requirement to compare perceived benefits and costs is not highlighted. As a result the tough issues tend to receive less explicit attention and appear to be less important even though they are binding in actual practice. It is our belief that the methodology for needs assessment can be improved greatly if all concerned approach program evaluation in a more precise and vigorous manner.

Specifically, needs assessments should be related to the extensive literature (methodology and case studies) in policy evaluations, cost-benefit analysis, and cost-effectiveness analysis. The term policy evaluation is used to describe the broad activity of comparing all the favorable and unfavorable aspects of an existing or proposed public program (see Peskin and Seskin, 1975). By contrast, the term cost-benefit analysis refers to a formal procedure of comparing efficiency gains and losses of the program where the terms benefits and costs, and efficiency are given specific meanings. Cost-effectiveness analysis estimates the costs of alternative methods to achieve a given policy objective. Since the objective is

given, the necessity of benefit measurement (in dollar units) is avoided, and the goal is to select policies that minimize costs of achieving a specific objective. A complete policy evaluation of a program would encompass either cost-benefit analysis or cost-effectiveness analysis. But, in addition, it would include more than efficiency considerations such as distributional effects, political feasibility, and legal and intangible aspects.

As we see it, VTE needs assessments do involve some of the aspects of policy evaluation but there has not been explicit recognition of the need to use fomalized technique and procedures and the need for a formal statement of objectives. The dilema faced in this study is that we have been asked:

1) to develop methodology of assessment of VTE needs in all urban areas of Florida,

2) to use the methodology to make a needs assessment of:

* business and industry needs,
* student needs,
* funding needs,
* facility needs, and
* personnel needs.

Yet, we have had to infer specific policy objectives, and we have not been given effective cost or budget constraints for programs specified. Thus, we have not been able to face head on the tough issues of policy evaluation and thus to quantify and compare "needs" in relation to costs.

To illustrate with just a minor example, how can one really estimate the needs of the handicapped students without a measure of the costs of special programs, without measures of the effects on the needs of other students and without the indicators of placement and job performance? Otherwise needs evaluation for the

handicapped students may simply be no more than a narrative description of the handicapped students and their programs. Clearly, some "needs" are being met but such a narrative world provide few clues for formal policy evaluation of the programs for the handicapped.

The present study can be characterized as developing a formalized approach to needs assessment. It points toward the need for policy evaluation; it suggests that needs assessments per se will have limited value until the procedures and tools of cost effective analysis, cost-benefit analysis, and policy evaluation are developed for VTE. Furthermore, it has identified some prerequisites for the necessary policy evaluations including improved cost data by programs, clearly stated program objectives and more adequate placement data.

## 2.3. Methodology of the Study

Our approach to needs assessment for urban labor market areas may be divided in two parts: (1) labor market analysis and manpower projections, and (2) analysis of the operation and performance of the VTE delivery system.

We see a great need for the improvement of local (regional) manpower data in terms of accuracy and format. We see an even greater need for assistance to local VTE personnel in how to use the manpower data. Our field surveys of VTE programs, facilities, teachers, students and administrators show the importance of face to face contacts which can never be replaced by other assessment methods. Our business needs conference requires further study.

## 2.4. Labor Market Analysis and Manpower Projections

Needs assessments for urban areas should begin with detailed labor market analysis and accurate manpower projections developed annually for each major urban area (SMSA). Our approach to the development of urban manpower projections involves the following six steps:

2.4.1. Develop a general economic analysis of the region and its potential for economic and population growth

This should be done at least on an annual basis, so that it can be kept updated and revised. It should be done before a detailed manpower analysis is undertaken. When placed within an overall regional economic context, detailed projections will be more useful and understandable to VTE planners, busiress and industry, guidance and placement counselors and to students. However, the specification of the relevant urban labor market or region to be studied needs careful consideration.

In first testing our methodology we used (in Phase One) Planning Region Four in Northeast Florida comprising Baker, Nassau, Duval, Clay, Putnam, St. Johns and Flagler counties as representative of the Jacksonville labor market. For this area the designated planning region coincided pretty well with the labor market area (SMSA).

However, there are ten planning regions in Florida (See Figure 2.1) the Florida Department of Administration. The OIDS system (Tarr and Campbell, 1975) provides occupational staffing matrices on a planning region basis. By contrast, the State of Florida now has 16 SMSA's (See Figure 2.2). We believe that the SMSA is a better way to define a labor market for purposes of making occupational forecasts for urban areas. Currently the OIDS system is available for only four of the SMSAs (Jacksonville, Tampa-St. Petersburg, Miami and Orlando). In many cases the defined planning regions do not coincide with SMSA labor market definitions.

For the Jacksonville study there was a close overlap between Planning Region Four and the Jacksonville SMSA (which does not include Flagler or Putnam counties). Yet, in the current study we are using the Tampa Bay area comprising Hillsborough, Pinellas, Pasco and Manatee counties. By contrast, the Tampa-St.

Figure 2.1.--REGIONAL PLANNING DISTRICTS

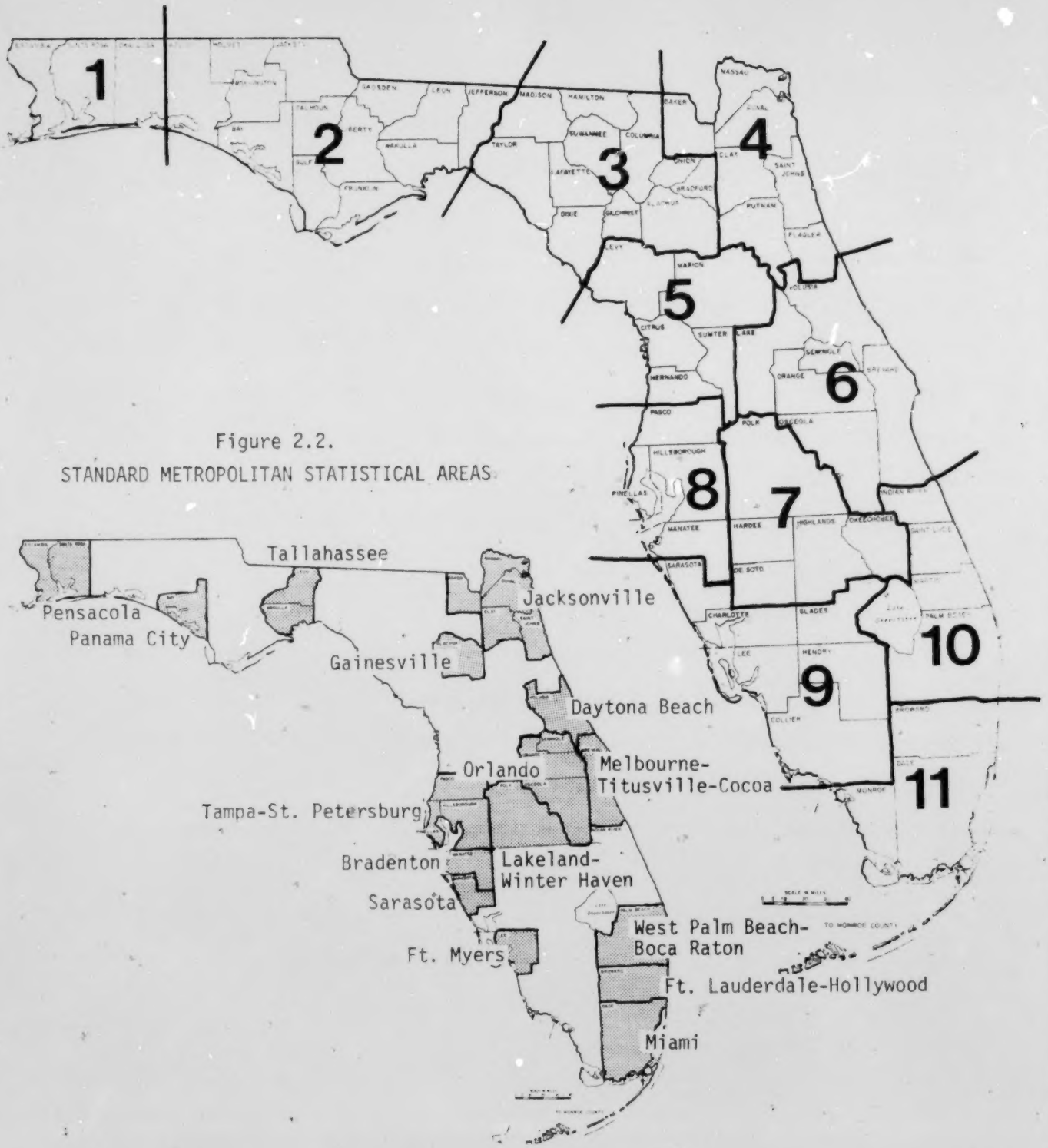



Figure 2.2.
STANDARD METROPOLITAN STATISTICAL AREAS

Petersburg SMSA excludes Manatee County. We also find that Pasco County is largely a part of the Tampa-St. Petersburg labor market. However, the community college district for VTE planning in the Tampa Bay area combine Pasco and Hernando counties and stipulate that the VTE planning for these counties be done separately from the VTE planning in Pinellas and Hillsborough counties which each have their own colleges.

Clearly, one of the problems of developing methodology for assessing VTE needs for urban areas is the fact that both the delivery system and the labor market information system tend to use geogrpahical definitions which do not coincide with urban labor market boundaries. Recognition of this problem is basic to improving urban needs assessments.

2.4.2. Develop an econometric model for forecasting employment and income for the region

In the Phase One report we tested three projection techniques, trend projection, shift-share projection and econometric models. All three techniques produced reasonable looking forecasts. We selected the econometric technique, though it is more costly in terms of qualified personnel, as being superior because it is causually based and because it is more capable of simulating alternative policy outcomes. In the present report, however, we conclude that econometric projections based upon OIDS methodology provide reasonable forecasts at lower costs than a fully specified econometric model.

We believe that an econometric model of OIDS type for each SMSA can be justified in terms of expense and utility.

It is important to test and calibrate a model over a period of time, so that the model builders and users can become familiar with the dynamic properties

of the model. Running a model over different sample time periods will permit documentation of its dynamic properties and its error characteristics. A model can be used to develop three to five year forecasts of the region's employment and personal incomes by detailed industry sectors. These forecasts should be updated annually.

2.4.3. Translate the industry employment forecast into an occupational forecast by use of the OIDS matrix

The OIDS matrix is a cross tabulation of 201 industrial employment categories by 440 occupational classifications. The industry employment projections generated by the econometric model (or by some other technique) is simply multiplied by the industry-occupation matrix. We believe that occupational forecasting accuracy may be improved by collapsing the 440 occupational categories into more aggregate categories. This would allow VTE occupation specialists from the urban area in a business needs conference setting to make judgemental forecasts of very detailed occupational needs for each particular urban area.

As we indicated above there is need to develop the OIDS system for each of the 16 Florida SMSA. However, we believe that it would be unwise to extend the system to all individual counties because labor market analyses should be related to SMSA boundaries.

2.4.4. Mesh occupational forecast of employment and manpower supply by occupation to determine relative magnitudes of surpluses and shortages

The meshing of the two sets of occupational forecasts will determine relative magnitudes of shortages and surpluses. It needs to be stressed that the employment forecasts are based upon the "requirements" approach (expansion demand plus replacement demand), and that a job opening is not the same as a job vacancy. By the same token the occupational supply forecast includes only VTE graduates, so that the meshing

of requirements and graduates is limited. The outcomes do not allow for possible responses by employers and workers to conditions of excess demand or supply. VTE planning must go beyond these projected outcomes to allow for the interaction of market forces which may affect actual future employment. Given the state of the art, this type of adjustment can best be done at the urban area level by skilled labor market observers.

2.4.5. Apply BLS crosswalk to occupational outcomes to obtain "needs" for VTE programs

Job clusters arranged by occupational titles differ from the cluster of job training programs used by VTE. The BLS crosswalk serves as a bridge between OIDS matrix information and VTE program codes. The BLS conversion table is still awkward to apply and rather crude. Further disaggregation along VTE lines with reference to the special needs of each individual urban area may be warranted. More significance should be attached to aggregate program clusters from the crosswalk procedure. The disaggregation into specialized VTE programs is best done at the urban area level. There is no standardized procedure to allocate occupational categories at a very disaggregated level among VTE programs.

2.5. Analysis of the VTE Delivery System

In many ways this is the most important part of the needs assessment. It certainly is the most expensive and difficult part of the process because a thorough job requires: (a) extensive field work and (b) the commissioning of special studies.

Moreover, this part of the needs assessment is also politically sensitive. Every interest group in the VTE delivery system and in the interface with the job market has its own special interests and its own "domain". Truly objective studies are difficult to perform because of the "political" forces at work seeking to protect their vested interests.

In addition, VTE delivery systems are extremely (perhaps excessively) complex in their organizational structure and in their budget making framework. At best regional coordinating councils seem to offer only limited coordination of competing VTE delivery systems both within and between counties in the same SMSA.

Next, there is often lack of agreement on the objectives of VTE systems both nationwide and in the state, e.g. rural versus urban program needs, high school versus community college programs, specialized versus general training, academic versus vocational goals, and special programs for the disadvantaged versus more offerings for the general student.

Finally, there is a general lack of program budget information both with regard to specific program costs and also to program outputs. Florida has instituted a management information system which is still only partly functional. This system is aimed at providing comprehensive placement and follow up data on VTE graduates. However, importantly, placement data needs to be related carefully to both general labor market trends and program costs, so that the elements of a cost-effectiveness analysis can be implemented. However, effective program budgeting has yet to be instituted.

In both the Phase One and the Phase Two parts of this study our methodology has concentrated on two aspects: (a) analysis of labor market conditions and VTE program data and (b) the conduct of extensive field surveys of students, faculty, administrators, equipment and facilites. We were not able to commission special studies of program costs or of program placement experience. Our discussions with employers were more limted that we would have liked. A special study of proprietory vocational schools and students was not undertaken.

Perhaps the most important part of our methodology for study of the VTE system is the field work in the labor market area. On site visits and discussions with

students, instructors, and administrators provided us with much valuable information which otherwise would be unavailable. None of the previous needs assessments we have studied conducted field interviews with all of the groups and also examined equipment and facilities.

In each study area we were granted virtually unlimited access to the VTE facilities by officials. We are not aware of any attempt to direct our interviews or to distort our field work by attempts to control access to personnel, students or facilities.

In the two studies well over two hundred separate interviews were undertaken. The interviews were usually conducted in a candid and open manner and "off the records" comments were commonplace. Therefore, we did not cite individuals or particular locations.

In each interview, we stressed that our purpose was not to evaluate programs per se. Instead, we stated that our efforts were directed to the development of methodology for needs assessment. However, it is possible that field work which is being carried out to explicitly evaluate programs may run into more obstacles than we encountered. Clearly, the preservation of anonymity would be important in the cast of explicit evaluation.

All members of the study team participated in some of the field work which, in our view, helped "socialize" the study team itself. We used a check list of "standard" questions. Written reports of each individual interviewer were filed after each field trip.

In the Jacksonville study area additional field interviews were held after the Phase One study report was issued with persons we had previously interviewed. This type of "feedback" is not often available to study personnel because needs assessments are not standardized and carried out on a regular basis, using common procedures and the same personnel.

In the case of the Phase Two study, most of the VTE administrators had received copies of the Phase One report. Here again, our field work was aided by being able to talk with officials familiar with our work and our intent. Thus, we were able to get comments on our earlier study and to check more quickly similarities or differences in findings, points of view and in situations.

We believe that having two studies has allowed better cross-checking of methodology. It has meant that study personnel had fewer "start up costs"; it has also allowed the study team to gain valuable knowledge and experience in analyzing a complex, multi-faceted VTE delivery system.

Outline

Chapter 3

Economic Overview of the Tampa Bay Area

3.1. Introduction

3.2. Demographic characteristics

3.3. Economic composition

3.4. Dynamic properties

3.5. Prospects for future growth

## 3.1. Introduction

This chapter provides a general economic and demographic analysis of the Tampa Bay area. Through our continuing research on VTE needs assessment we have recognized the importance of an overall regional economic perspective for effective VTE program planning. Detailed occupational forecasts are most useful when they can be evaluated in the context of overall economic trends. Furthermore, our research has revealed that users of the manpower information which is currently provided are often confused by the welter of often conflicting numbers which they receive and by the lack of a narrative explaining the data. Finally, demographic and economic characteristics of the planning area provide insight into future enrollment levels in VTE programs. The material contained in this chapter is illustrative of how economic and demographic trends can be collected and presented in a meaningful way so as to augment the detailed manpower forecasts which follow.

Throughout our research, both in this study and in our Phase One report, we have emphasized our view that effective VTE planning at the local level must be oriented toward the local labor market. While it is true that national and regional trends should not be ignored, the local labor market is the most important source of employment and income.

This local labor market we speak of must be defined in functional economic terms. Political definitions such as municipalities or counties are not appropriate delineations. Typically economic activity is concentrated in relatively few areas within the labor market, and workers commute to job sites from surrounding areas and often from other counties. Thus, commuting patterns, concentrations of industry, linkages among industries, and population densities are useful in defining functional economic areas. These criteria are used by the Office of Management and Budget to define standard metropolitan statistical areas. Finally, from a practical point of view economic areas need to be defined in terms of whole counties because data is collected and reported on this basis.

In the Tampa Bay area two alternative labor market definitions could be used. On the one hand, the Tampa-St. Petersburg standard metropolitan statistical area is defined as Hillsborough, Pinellas, and Pasco counties--a large integrated economic area with the cities of Tampa and St. Petersburg at its core. On the other hand, the State of Florida has defined state planning region eight as Pasco, Hillsborough, Pinellas, Sarasota, and Manatee counties. The addition of Manatee County to the Tampa-St. Petersburg SMSA can be justified in terms of community patterns and industrial linkages although the linkages between the SMSA and Manatee County is more tenuous than the linkages to, say, Pasco County. Finally, one could argue for the inclusion of Sarasota County given its linkages to Manatee County and the rest of the "suncoast." However, we felt this was not appropriate as it would extend the scope of the study of an unmanageable size. Furthermore, Sarasota County is defined as a separate SMSA as is Manatee County.

For this report we have chose to use the Tampa Bay Region as the study area which is composed of Hillsborough, Pinellas, Pasco and Manatee counties. We made this choice for two reasons. First, certain data are more readily available, in particular detailed occupational data. In addition, the OIDS system (Tarr and Campbell, 1976) provides occupational demand forecasts for all of Florida's planning regions and selected SMSA's. Second, we wanted to provide a further test of the methodology developed in Phase One. Our prior research was conducted in planning region four which included Duval, Nassau, Baker, Caly, St. Johns (these five counties constitute the Jacksonville SMSA), Flagler, and Putnam counties. Thus, it seemed most appropriate to select an extended SMSA area for a further test.

The Tampa Bay area is a large complex and somewhat diverse area on Florida's West Coast. Figure 3.1. is a map of the area which includes some descriptive data, and Table 3.1. also provies some general descriptive data. The Tampa Bay area contains 5 percent of Florida's land area,

Figure 3.1

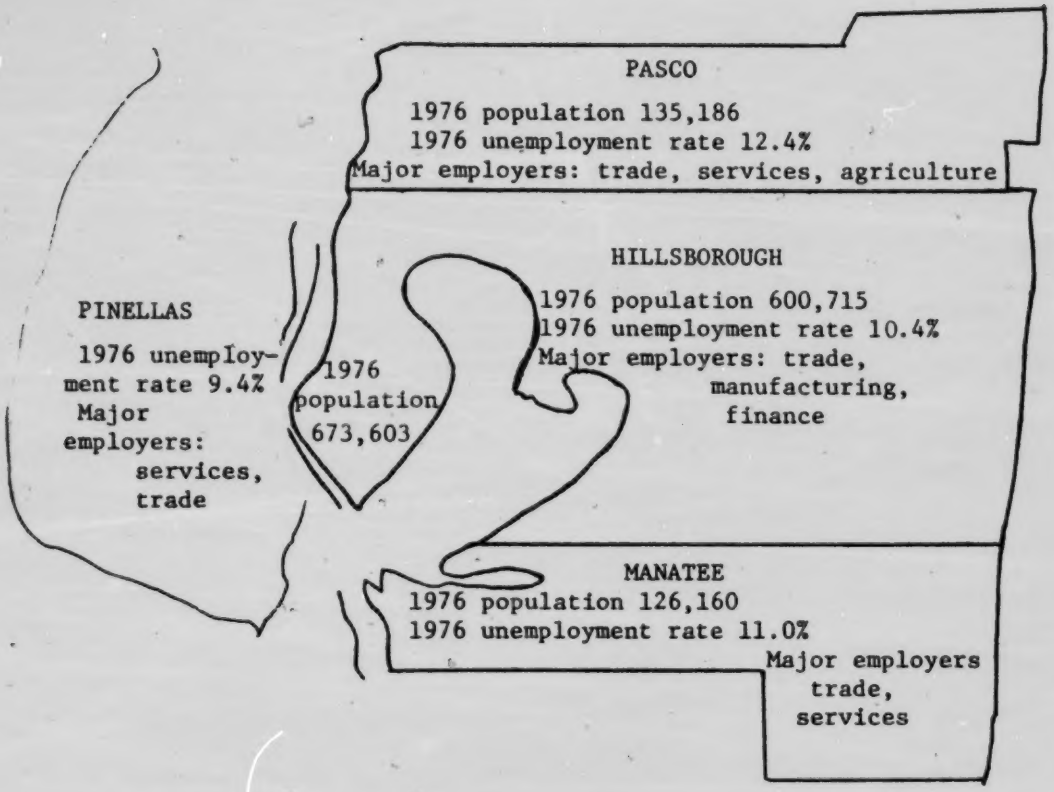

PASCO
1976 population 135,186
1976 unemployment rate 12.4%
Major employers: trade, services, agriculture
HILLSBOROUGH
1976 population 600,715
1976 unemployment rate 10.4%
Major employers: trade, manufacturing, finance
PINELLAS
1976 unemployment rate 9.4%
Major employers: services, trade
1976 population 673,603
MANATEE
1976 population 126,160
1976 unemployment rate 11.0%
Major employers trade, services

Table 3.1.—General Descriptive Data

| Geographic Area | Area in square miles | 1976 Population | Density per square mile | % housing owner occupied 1970 |
|---|---|---|---|---|
| Hillsborough County | 1,062 | 600,715 | 565.7 | 69% |
| Pinellas County | 309 | 673,603 | 2,179.9 | 71% |
| Pasco County | 772 | 135,186 | 175.1 | 76% |
| Manatee County | 785 | 126,160 | 160.7 | 74% |
| Tampa Bay Area | 2,928 | 1,535,664 | 524.9 | 71% |
| Florida | 58,560 | 8,551,814 | 146.0 | 69% |

but it has 18 percent of Florida's population. The area is one of the most densely settled regions in Florida with a density of 524.9 people per square mile compared to Florida's 146.0 people per square mile. Another interesting general characteristic is the percentage of owner occupied housing. Florida is well known as a popular place for tourists, and the Tampa Bay area is particularly popular. Thus, it is somewhat surprising to find that the Tampa Bay area exhibits a high degree of homeownership, over 70 percent of all housing units were owner occupied in 1970.

In the next four sections of this chapter we present a detailed profile of the most important demographic and economic forces which have shaped the Tampa Bay area. Section 3.2. concentrates on demographic characteristics, and section 3.3. explores the area's economic composition. Next we analyze the dynamic properties of the Tampa Bay economy. We conclude this chapter by examining the prospects for future growth in the area.

## 3.2. Demographic Characteristics

Population growth and demographic composition are the two most important characteristics for the economies of Florida's regions. Table 3.2. provides demographic data for Florida, the Tampa Bay area, and its component counties for 1970 and 1976. These data illustrate the similarities and differences in demographic makeup for each area.

First, although population grew rapidly in each area during the last six years, there are significant differences among them. As a whole the Tampa Bay area grew at a faster pace, 30 percent, than did Florida, 26 percent. However, within the bay area there were significant differences. Hillsborough grew at the slowest rate, 23 percent, while Pasco experienced a veritable population explosion, 78 percent.

Table 3.2.—Population and Demographic Characteristics
Florida, Tampa Bay Area, Selected Counties
1970-1976

| | Population[1] 1970 | % | Population[2] 1976 | % | Population growth 70-76 | % change in population from net migration |
|---|---|---|---|---|---|---|
| Florida | | | | | | |
| Total | 6,789.4 | 100% | 8,551.8 | 100% | 26% | 90.7% |
| 0-17 | 2,112.2 | 31% | 2,326.9 | 27% | 10% | NA |
| 18-64 | 3,691.5 | 54% | 4,793.9 | 56% | 30% | NA |
| 65+ | 985.7 | 15% | 1,431.0 | 17% | 45% | NA |
| Tampa Bay Area | | | | | | |
| Total | 1,185.7 | 100% | 1,535.7 | 100% | 30% | 102.6% |
| 0-17 | 324.1 | 27% | 379.1 | 25% | 17% | NA |
| 18-64 | 603.7 | 51% | 803.6 | 52% | 33% | NA |
| 65+ | 257.9 | 22% | 352.7 | 23% | 37% | NA |
| Hillsborough | | | | | | |
| Total | 490.3 | 100% | 600.7 | 100% | 23% | 78.8% |
| 0-17 | 164.3 | 34% | 184.7 | 31% | 12% | NA |
| 18-64 | 274.8 | 56% | 351.9 | 59% | 28% | NA |
| 65+ | 51.2 | 10% | 64.1 | 11% | 25% | NA |
| Pinellas | | | | | | |
| Total | 522.3 | 100% | 673.6 | 100% | 29% | 117.4% |
| 0-17 | 120.2 | 23% | 139.5 | 21% | 16% | NA |
| 18-64 | 248.2 | 48% | 326.3 | 48% | 31% | NA |
| 65+ | 153.9 | 29% | 207.8 | 31% | 35% | NA |
| Pasco | | | | | | |
| Total | 76.0 | 100% | 135.2 | 100% | 78% | 105.9% |
| 0-17 | 16.3 | 21% | 28.3 | 21% | 74% | NA |
| 18-64 | 36.0 | 47% | 66.6 | 48% | 85% | NA |
| 65+ | 23.7 | 31% | 40.3 | 31% | 70% | NA |
| Manatee | | | | | | |
| Total | 97.1 | 100% | 126.2 | 100% | 30% | 109.2% |
| 0-17 | 23.3 | 24% | 26.6 | 21% | 14% | NA |
| 18-64 | 44.7 | 46% | 58.8 | 47% | 32% | NA |
| 65+ | 29.1 | 30% | 40.5 | 32% | 39% | NA |

Sources: 1. U.S. Department of Commerce, Bureau of the Census, General Population Characteristics, Florida, 1970 Census of Population. 2. Bart Lewis, "Age, Race, and Sex Components of Florida's Population," Division of Population Studies Bulletin No. 40, Bureau of Economic and Business Research, June, 1977.

Furthermore, the sources of population growth also varied widely. In Florida over 90 percent of population growth between 1970 and 1976 was due to net migration. By contrast, Hillsborough experienced a population growth due to net migration of only 78 percent while in Pinellas County net migration accounted for 119 percent of population growth. Indeed, for Pinellas, Pasco, and Manatee Counties population growth was totally dependent upon net migration, and total deaths exceeded total births in these counties between 1970 and 1976.

Finally, the age structure of each area's population is quite different. For example, in 1976 persons 65+ constituted over 30 percent of total population in Pinellas, Pasco, and Manatee Counties as compared to 17% statewide and only 11% in Hillsborough. In addition, in each area the retirement age group has experienced rapid growth, and, except for Pasco, the 65+ cohort has increased in relative importance.

These demographic characteristics have an important influence on economic activity. At a fundamental level one consequence of these demographic forces is the reversal of some of the normal patterns of economic development. Generally regional development begins with the growth of primary (agriculture, mining) and secondary (manufacturing, processing, etc.) industries, followed by growth of tertiary (trade, services) industries in response to population flows induced by the increasing demand for labor. This pattern has been reversed in many areas of Florida and, in particular, in Pinellas, Manatee, and Pasco. Retirement age population is drawn here by locational advantages and not by employment, thereby serving as a stimulus for growth of activity and employment in the service, trade, and construction sectors.

Furthermore, it is likely that future population growth in each area will be affected by a different mixture of external and internal forces. More concretely,

population growth in Hillsborough was most rapid in the 18-64 age bracket. This influx of working age people is the result of comparative economic opportunities available in the county. This trend stands in contrast to Pinellas, Manatee and Pasco where the 65+ age group experienced the most rapid increase in size. Retirees are not particularly sensitive to relative labor market conditions, but rather they are more affected by amenities and housing market conditions. This is not to imply that the 18 to 64 group is unimportant to Pinellas or that the 65+ group can be ignored in Hillsborough, but it does indicate that the mixture of forces which determine population growth and its composition will vary considerably across regions.

These differences in demographic characteristics have large impacts upon the composition of employment and income in each area, and these influences will be examined in depth in section 3.3. Briefly, property income and transfer payments are relatively more important sources of personal income in Pinellas, Pasco and Manatee Counties because of their large numbers of retirees than in Hillsborough County with its much more youthful population. In addition, service and trade industries catering to older citizens bulk larger in Pinellas, Pasco, and Manatee than in Hillsborough which is far more industralized and commercially oriented.

Finally, these demographic characteristics have an important effect on the needs for VTE programs in each county of the region. Since the demographic characteristics of the counties differ, differing needs for VTE programs will exist, and VTE program offering should be modified accordingly. For example, in Hillsborough County over 20 percent of population growth comes from natural increase, and those over 65 account for only 11 percent of the population. With this relatively high rate of natural increase the County's population will retain its low median age for some time. Thus, VTE programs should be oriented towards this youthful labor force aged population, and training oriented towards entry level job skills may be most important.

By contrast the VTE program mix may need to be quite different in Pinellas, Pasco, and Manatee Counties. Here, the provision of entry level skills to youth will still be important, but retraining and adult education programs may be needed to a far greater extent than in Hillsborough County.

In summary then, the needs for VTE programs will be affected by the demographic characteristics of the region's population on both the demand and the supply sides of the market. Effective VTE planning will require careful consideration of demographic forces.

## 3.3. Economic Composition

### Employment

Important differences in the economic structure between Florida and the Tampa Bay area, and among Hillsborough, Pinellas, Pasco, and Manatee Counties are revealed by their distributions of employment. Table 3.3. provides recent data on the level and composition of employment by broad industrial categories for the final quarter of 1976 (seasonally adjusted,the most recent revised data which is available). First, comparing the Tampa Bay area to the state we find employment in the bay area is more concentrated in manufacturing, construction, and trade and less concentrated in the other broad industrial sectors. The bay area's higher concentrations of employment in construction and trade are consistent with the rapid growth of population in the area over the last six years and with the area's large number of 65+ residents. The importance of manufacturing in the area is largely because of the prominence of manufacturing (especially of durables) in Tampa with contributions of transportation and electrical equipment in Pinellas and food processing in Pasco.

Although there are significant differences in the composition of employment between the bay area and Florida, there are even greater differences among the bay area's component counties. For example, manufacturing, transportation, communication, and utilities account for a larger portion of employment in Hillsborough than in the

Table 3.3.—Composition of Employment, Florida, Tampa Bay Area, and Component Counties 1976:4
(Seasonally Adjusted in Thousands)

| | All Nonagricultural Industries | | Manufacturing | | Construction | | Transportation, Communication, Utilities | | Trade | | Finance, Insurance, Real Estate | | Services and Miscellaneous | | Government | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % |
| Florida | 2711.6 | 100% | 340.6 | 12.6% | 139.0 | 5.1% | 184.6 | 6.8% | 712.6 | 26.3% | 190.5 | 7.0% | 604.6 | 22.3% | 539.7 | 19.9% |
| Tampa Bay Area | 451.3 | 100% | 61.4 | 13.6% | 29.1 | 6.4% | 27.4 | 6.1% | 129.0 | 28.6% | 30.5 | 6.8% | 98.0 | 21.7% | 75.9 | 16.8% |
| Hillsborough County | 217.2 | 100% | 31.0 | 14.3% | 13.4 | 6.2% | 17.7 | 8.1% | 61.9 | 38.5% | 14.2 | 6.5% | 41.3 | 19.0% | 37.7 | 17.4% |
| Pinellas County | 182.4 | 100% | 23.9 | 13.1% | 12.1 | 6.6% | 7.7 | 4.2% | 52.1 | 28.6% | 13.7 | 7.5% | 46.3 | 25.4% | 26.6 | 14.6% |
| Pasco County | 21.5 | 100% | 2.5 | 11.6% | 1.5 | 7.0% | 1.1 | 5.1% | 6.0 | 27.9% | 1.1 | 5.1% | 4.2 | 19.5% | 5.1 | 23.7% |
| Manatee County | 30.2 | 100% | 4.0 | 13.0% | 2.1 | 7.0% | 0.9 | 3.1% | 9.0 | 29.5% | 1.5 | 5.0% | 6.2 | 20.5% | 6.5 | 21.5% |

Source: Florida Department of Commerce, "Labor Market Trends," March, 1977.

other counties of the area. Also, more finely disaggregated data reveal the relative importance of water transportation services (due to the Port of Tampa), wholesaling, and finance in Hillsborough County. This is consistent with the view of Tampa as the manufacturing and commercial hub of the bay area. In addition, these types of industries provide job opportunities for the relatively youthful population which resides in Hillsborough County.

By contrast, in Pinellas County employment in services, banking, medical services, and retail trade are prominent. These employment trends are reflective of a county well known as a tourist and retirement area, and one that has grown rapidly. The environmental amenities of Pinellas County have attracted an ever-growing contingent of central offices and other such footloose activities such as research development. Finally, electronics and transportation equipment fabricators have found Pinellas County an attractive location.

Prior to its phenomenal population growth during the last ten years Pasco County was largely an agricultural area with citrus and cattle operations predominating. These agricultural activities along with the attendant citrus and food processing operations are still important sources of income and employment in the county today. However, the recent explosive growth of population has stimulated employment growth in the construction, services, and government sectors. This growth in population has been concentrated along the coast, and it has spawned new employment opportunities there leaving the central and eastern portions of the county still dominated by agriculture.

Manatee County has also experienced rapid population growth particularly in the 65+ age group. Indeed, with 32 percent of its population 65+ Manatee County has the highest proportion of retirement-age residents in the Tampa Bay area. As a result construction, government, and trade are relatively important employment sectors.

Significant numbers of commuters from Manatee and Pasco Counties travel to Tampa, St. Petersburg, and Clearwater to work each day. These commuting patterns are reflected in the limited data on commuting and traffic counts and can be inferred from the data on the residence adjustment component of personal income. Personal income measures are reported on a place of residence basis, so the earnings of employees who work outside their home counties must be accounted for. The residence adjustments are large and positive for Pasco and Manatee Counties which indicates substantial numbers of workers earn wages outside their local counties. Residence adjustment for Pinellas County is close to zero, and for Hillsborough County it is large and negative which reflects the large number of commuting workers.

Personal Income

The demographic and economic differences identified above are also reflected in the composition of personal income. These data are displayed in Table 3.4. Between 1970 and 1975 personal income increased at a rapid rate in Florida and the Tampa Bay area, 84 percent and 90 percent respectively. The counties of the Tampa Bay area had widely different growth rates of total personal income even though the growth of personal income in each county exceeded the Florida average. These growth rates ranged from Pasco's high of 137 percent to Hillsborough's 85 percent.

In per capita terms the bay area as a whole has consistently lagged Florida, by 5 percent in 1970 and 4 percent by 1975. Only in Pinellas County does per capita income exceed the statewide figure. However, except for Pasco County per capita incomes in the bay area have been closing the gap with respect to the state total. In the case of Pasco County although total personal income has surged, population growth has occurred at a similar rate and per capita income grew by only 30 percent between 1970 and 1975.

Analysis of the composition of personal income is instructive. First, compared to the state, wages and salaries account for a smaller proportion of personal income,

Table 3.4.—Personal Income and Its Components

| | Total personal income (millions) | Income per capita (dollars) | Percentage wages, salaries, and proprietor's income | Percentage property income | Percentage transfer income |
|---|---|---|---|---|---|
| Florida | | | | | |
| 1970 | 25,596 | 3,738 | 71 | 18 | 11 |
| 1975 | 47,069 | 5,640 | 66 | 18 | 16 |
| Percentage change | 84% | 51% | | | |
| Tampa Bay Area | | | | | |
| 1970 | 4,235 | 3,546 | 66 | 21 | 16 |
| 1975 | 8,503 | 5,411 | 59 | 19 | 20 |
| Percentage change | 90% | 61% | | | |
| Hillsborough County | | | | | |
| 1970 | 1,655 | 3,357 | 78 | 11 | 11 |
| 1975 | 3,070 | 5,239 | 77 | 11 | 12 |
| Percentage change | 85% | 56% | | | |
| Pinellas County | | | | | |
| 1970 | 2,027 | 3,854 | 52 | 28 | 20 |
| 1975 | 3,797 | 5,817 | 52 | 27 | 21 |
| Percentage change | 87% | 51% | | | |
| Pasco County | | | | | |
| 1970 | 230 | 2,979 | 56 | 24 | 20 |
| 1975 | 546 | 3,854 | 53 | 22 | 25 |
| Percentage change | 137% | 30% | | | |
| Manatee County | | | | | |
| 1970 | 323 | 3,294 | 66 | 26 | 19 |
| 1975 | 639 | 5,212 | 64 | 24 | 23 |
| Percentage Change | 98% | 58% | | | |

Source: Unpublished data courtesy of the U. S. Department of Commerce, Regional Economics Division.

66 percent compared to 59 percent in 1975. However, property income and transfer payments represent a larger share of personal income in the bay area, 19 and 20 percent respectively in 1975, than in Florida, 18 and 16 percent respectively.

Of greater interest are the differences among the counties of the bay area. Hillsborough stands out from the other counties because of its high proportion of wage and salary income, 77 percent in 1975, and its correspondingly low proportion of property income and transfer payments. The remaining bay area counties are far more similar in terms of the sources of personal incomes. The relatively large contributions of property incomes and transfer payments to personal incomes in Pinellas, Pasco, and Manatee Counties is again due to the presence of a proportionately greater number of retired persons in these areas than in Hillsborough or Florida. These retirees tend to receive greater shares of their incomes in the form of dividends, interest, rents, and transfers than in wages and salaries.

Differences in the sources of personal income across areas result in each area being somewhat differently affected by business cycle developments. For example, total personal income is more stable in Pinellas since nonwage income bulks large as compared to Hillsborough where wage income is relatively more important. More generally, differences in demographic makeup, employment composition, and income components result in different dynamic forces for the economies of each area. We explore these consequences next.

3.4. Dynamic Properties

Florida, the Tampa Bay area, and its component counties exhibit differences in the dynamic properties of their economies over the course of the business cycle. The differential consequences of the latest business cycle are instructive. While there are a number of economic indicators available to describe the dynamic properties of an economy, population growth, per capita real income, construction activity, and the unemployment rate are most useful in analyzing the Florida and

Tampa Bay area economies.

The growth of population in the Tampa Bay area is one of the driving forces in the area's economic development. However, the growth rate of population has not been smooth, and it has varied significantly across the bay area's counties. Changes in the growth rate of population has had an important influence on other economic trends in the region. Figure 3.2 displays the percentage change in population for the region's four counties. Population growth has been most volatile in the less populous counties, Pasco and Manatee, but it has ranged from nearly 1.5 percent to almost zero percent per quarter in both Hillsborough and Pinellas.

A second important indicator of cyclical behavior is real per capita personal income. Its growth path has also not been smooth as Figure 3.3 shows. The effects of the 1973-74 recession and the area's protracted recovery are obvious from the graph. Furthermore, the counties show nearly parallel movements in real per capita income over the course of the last business cycle.

Movements in the unemployment rates in each county provide some further insights into cyclical behavior. These data are plotted in Figure 3.4. Again we note the generally close correspondence in movements of the unemployment rate in each area. However, the responsiveness of each county's economy to the onset of the recession varied somewhat. The larger counties, Hillsborough and Pinellas, suffered rising unemployment rates three quarters earlier than Pasco and Manatee. However, the impact in terms of the unemployment rate was less severe in Hillsborough and Pinellas, and the unemployment rates for these counties began to fall earlier. The effects of the last recession were particularly severe and protracted in Pasco County.

Some further insights into the dynamic behavior of the bay area's economies can be gained by examining Figure 3.5 which graphs total housing starts by county. Since population growth plays such an important role in the economic development

Figure. 3.2.—Percentage Changes in Population: Hillsborough, Pinellas, Pasco, and Manatee Counties

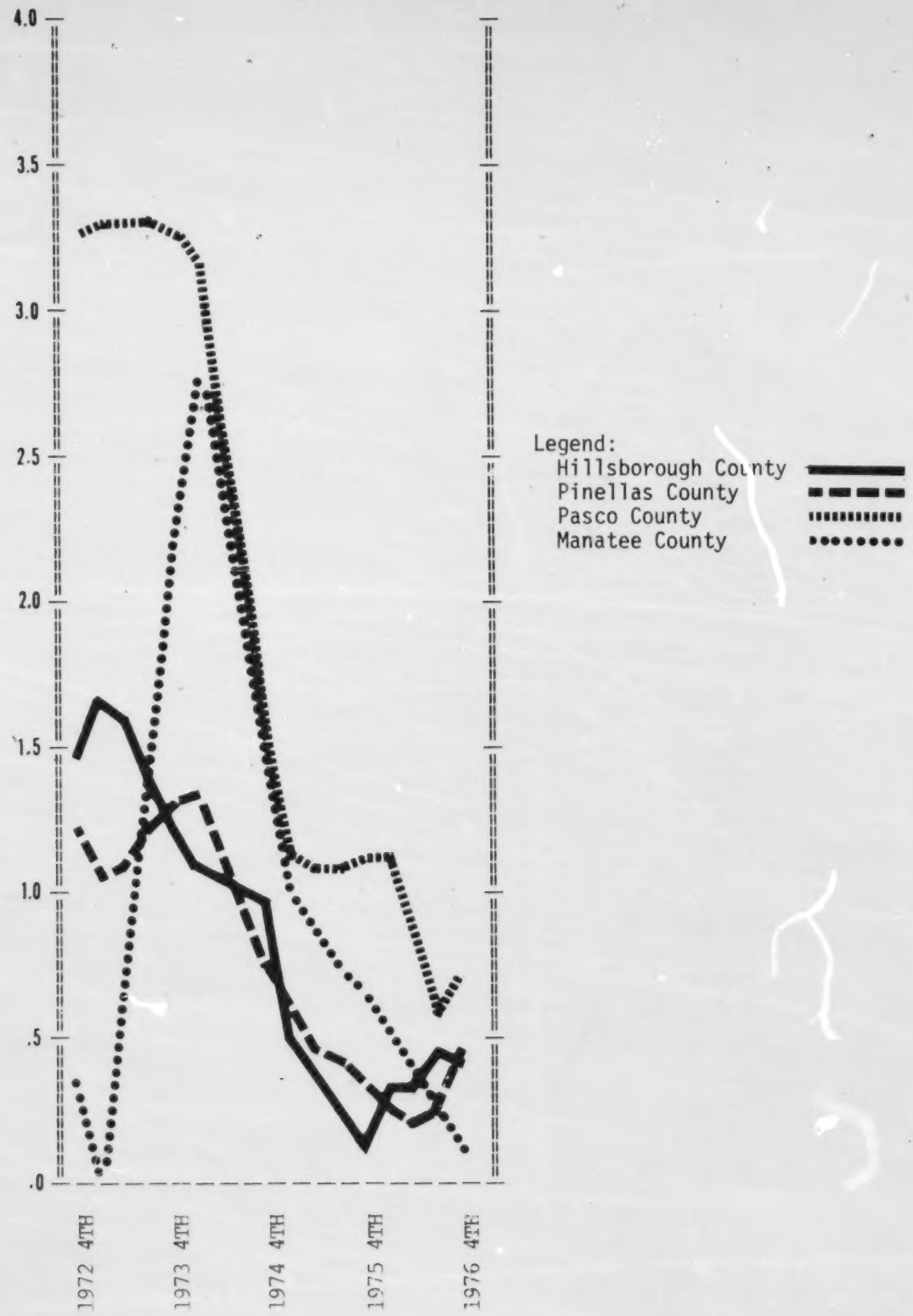


Figure. 3.3.—Real Per Capita Personal Income: Hillsborough, Pinellas, Pasco, and Manatee Counties

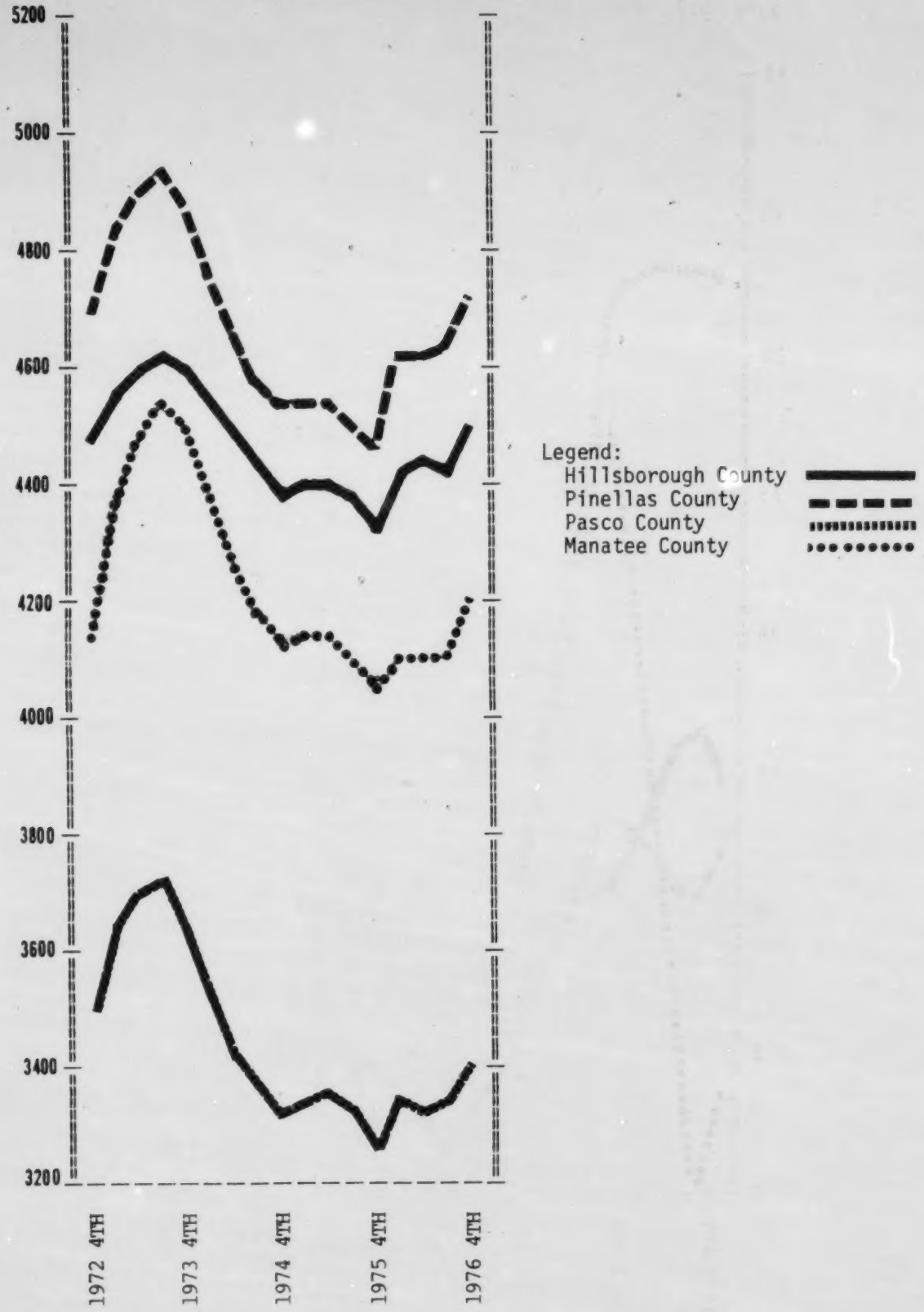


Figure. 3.4.—Unemployment Rates: Hillsborough, Pinellas, Pasco, and Manatee Counties

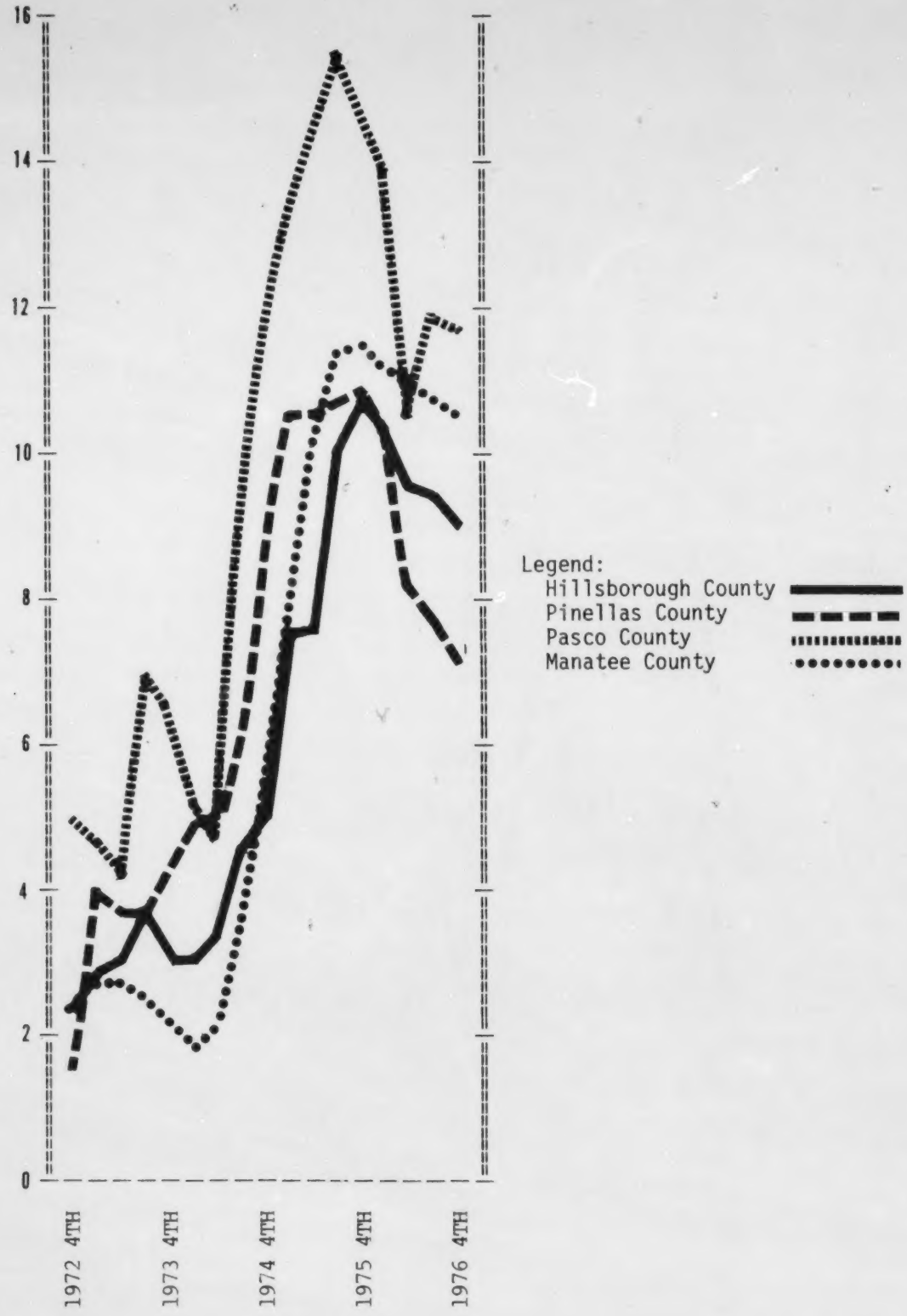
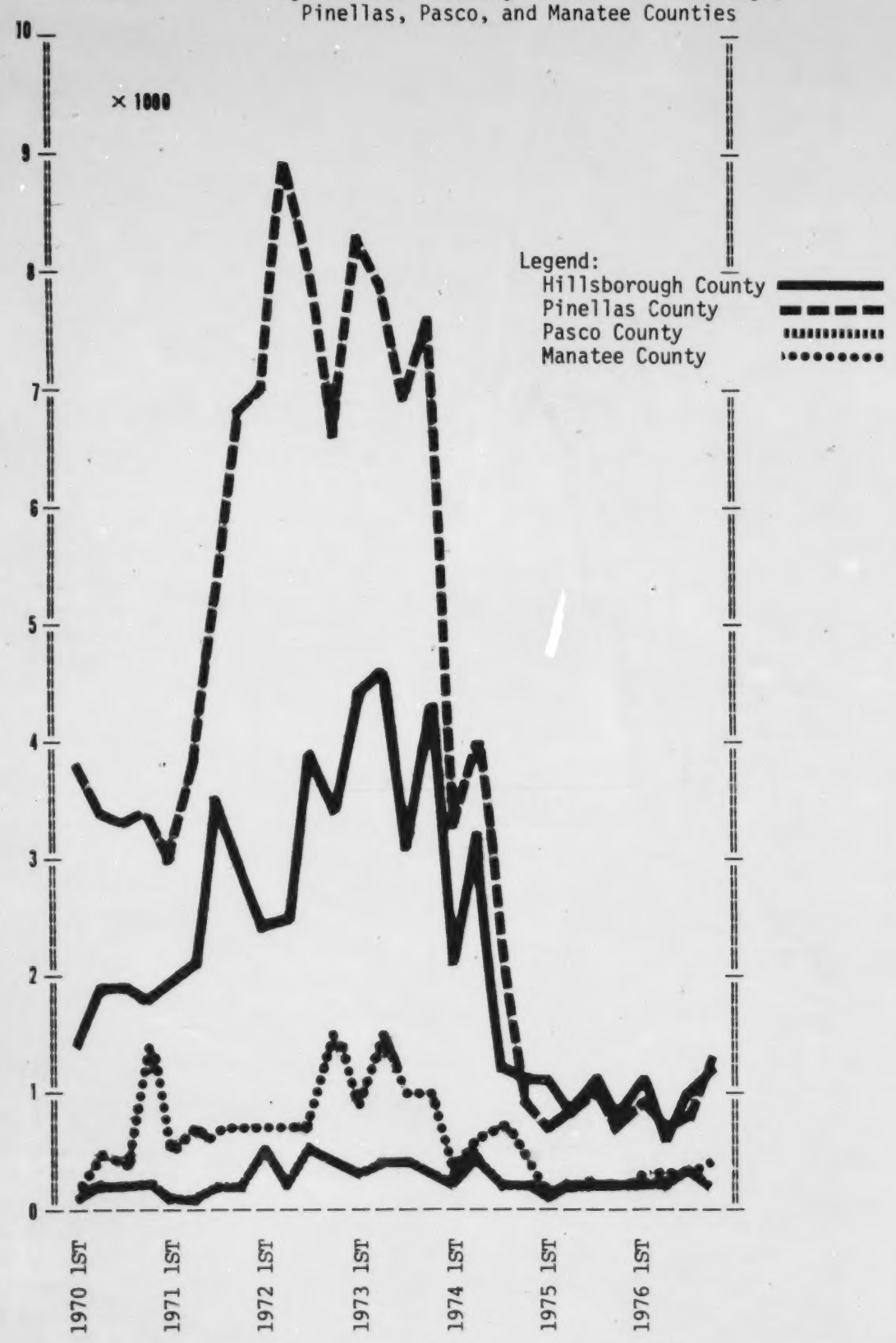


Figure. 3.5.—Housing Starts: Hillsborough, Pinellas, Pasco, and Manatee Counties



of the area, its effects are reflected by and magnified in the construction sector. In fact, the construction sector is the most volatile element in the region's economy. Thus, the dynamic behavior of the area's economy is conditioned to a certain extent by movement in construction.

The volatile nature of construction activity is clearly illustrated in Figure 3.5. We note that construction activity is also highly volatile in Pasco and Manatee Counties. However, this characteristic is not shown in the graph because housing starts in these two counties are low relative to Pinellas and Hillsborough. While the overall movements of these series show a rough correspondence, the amplitude of the movements is quite different. Construction activity is particularly volatile in Pinellas and Pasco counties.

The dynamic properties of the economy of the Tampa Bay area have some implications for VTE programs. Due to their administrative organization, political climate, and mandated goals (discussed in Chapter 5), VTE programs are inherently oriented to the medium and long run. They can not respond immediately to rapidly changing business conditions, and there is little rationale for them to do so. Instead, VTE programs strive to fulfill the longer term needs of their communities as shaped by demographic trends and secular as opposed to cyclical economic forces.

However, a problem may exist in evaluating the efficiency and effectiveness of VTE programs in the short run given the influences of business fluctuations on the demand for labor. Since VTE programs are evaluated in terms of the placement of graduates in the near term, a program may be deemed poor due to low placements or excellent because of high placements not because of the qualities of the program itself but because of changes in the business cycle. This is not to say that placement performance is an inappropriate standard. Rather, we are arguing that in evaluating the short run accomplishments of a VTE program the effects of the business cycle must be controlled for.

## 3.5. Prospects for Future Growth

As an overall generalization economic development in the Tampa Bay area has largely been a function of population growth. The influx of retirement-age population has played an important role particularly in Pinellas, Pasco, and Manatee Counties. Thus, the future growth path of population is one of the fundamental determinants of future economic prospects for the region. In this regard it appears most likely that population growth will resume at more normal levels rebounding from its very low levels of 1975 and 1976. Recent data bears this assumption out. However, it seems unlikely that Pinellas and Hillsborough Counties will again experience the very rapid growth rates in population which characterized the early 1970's for two reasons. First, densities have increased significantly in each of these two counties. Second, as the base population in an area becomes larger, the maintenance of a growth rate requires even larger numbers of inmigrants. By contrast, a resumption of rapid population growth seems reasonable for Manatee and Pasco Counties. These areas are along the coast and offer a high level of environmental amenities. However, here too we do not expect the veritable population explosion of the early 1970's to repeat itself for the same essential reasons we expect a tapering of population growth in Pinellas and Hillsborough.

Other factors are at work which also influence future economic activity in the area. First, Tampa continues to be an attractive location for manufacturing firms. Plans for expansion of the Port of Tampa and improvements in the highway network will add to its attractiveness for manufacturing. Furthermore, Tampa continues to be the commercial and financial hub of the area, and wholesaling, finance, and business services should expand in the future.

Second, Pinellas County in general and St. Petersburg in particular have very attractive locations for home offices, research and development firms, and electronics

manufacturing. These activities have served to broaden the county's economic base. Prospects for the continuation of these trends are bright.

Finally, with increasing levels of population we expect an expansion of service and trade activities in Pasco and Manatee Counties. In addition, the construction sector should regain its vigor.

An important constraint on potential growth in the Tampa Bay area is fresh water. For a number of years water supplies in the area have been under increasing stress. Limited inter county water transfers are already occurring between Pinellas and Pasco Counties. Furthermore, increasing urbanization along the coast will compete more strongly with agricultural demands for water in the future. These trends require careful consideration in a long term projection for the area.

This discussion has been rather general in nature. In the following chapter we build upon the analysis here and develop a rigorous and detailed forecast of economic conditions for the Tampa Bay area.

Outline

Chapter 4

Methodology for Making Occupational Projections for Urban Areas

4.1. Introduction

4.2. Review of the OIDS methodology

4.3. Uses and abuses of manpower information

4.4. 1980 occupational projections for the Tampa Bay area

4.5. Implications for vocational and technical education

## 4.1. Introduction

The purpose of this chapter is to report on the methodology we recommend to generate occupational forecasts. An accurate forecast of future levels of employment by occupations is a prerequisite to determining the need for VTE programs in urban areas. Thus, we have devoted considerable research to analyzing, evaluating, and testing alternative procedures for generating occupational forecasts.

Our research demonstrates that the Occupational Information and Delivery System (OIDS, Tarr and Campbell, 1975, 1976) provides the best available information on future levels of employment by occupations. While it may be true that some alternative procedures we have developed can yield marginally better forecasts, these are only available to VTE planners and administrators at far greater costs because their implementation requires highly skilled manpower and expensive computer time. By contrast, the OIDS information is produced in an ongoing research effort, and it is available at low cost. Both the degree of accuracy and the amount of disaggregation the OIDS forecasts appear adequate for VTE planning and evaluation purposes.

This is not imply that OIDS can not be improved for use in VTE needs asessments. For example, we illustrate a relatively straightforward extension of OIDS, relating the OIDS occupational forecasts to VTE program codes, which will make the occupational projections more useful in a VTE context. Further improvements can be made on the estimation of replacement demands and in projecting the supplies of labor by occupations. However, the OIDS system is most useful and appropriate for VTE needs assessments, and we recommend its application in all Florida SMSAs.

This chapter explores these points in greater detail. To set the stage for the forecasts it is useful first to review the OIDS methodology as discussed in our Phase One report. Essentially the OIDS procedures follow a methodology first developed by the Bureau of Labor Statistics (BLS) in 1969 which is now being used in nearly 40 states. To use the OIDS information effectively one must have a clear understanding of how the forecasts are developed and what their limitations are.

Also as a preface to the forecasts, in section 4.3. we examine the uses and abuses of OIDS labor market information as identified in our fieldwork. We have found many instances where labor market information was misunderstood by VTE planners and administrators.

Section 4.4. presents a series of projections we developed. We explored two procedures, a shift-share approach and an econometric approach, and we compare these to the OIDS projections. These comparisons are the basis for our recommendation to utilize OIDS for VTE needs assessments in urban areas of Florida.

The final section of this chapter shows how occupational projections can be related to VTE program codes. This extension should make the OIDS forecasts more useful for VTE needs assessments.

## 4.2. Review of the OIDS Methodology

### OIDS in Florida

In response to the need for detailed occupational employment information, the Bureau of Labor Statistics, BLS, developed the Occupational Employment Statistics program (OES) during the 1960's. OES is a Federal/State cooperative program which is now operational in over 40 states. The OES program is described in detail in Tomorrow's Manpower Needs Vol. 1-4 and supplements (1969-1975). The methodologies described in Tomorrow's Manpower Needs have been implemented in the cooperating states.

Florida was one of the first states in the Southeast to implement the OES program. In Florida the OES program is called the Occupational Information Delivery System, OIDS, and it was developed by Tarr and Campbell (1975, 1976). Currently this system provides detailed forecasts of employment by industries and by occupations through 1980. Forecasts are available for the entire state, each of its planning regions and for selected SMSA's. Below we describe OIDS as it now functions in Florida.

The OIDS system is designed ultimately to encompass three components, demand, supply, and interface. Of these the demand component is the most well developed, and we examine it first. The demand component of OIDS consists of three elements:

(1) the occupational employment statistics survey - a stratified mail survey of nonfarm establishments, conducted on a rotating three year cycle, to collect data on wage and salary employment by occupations;

(2) the industry - occupation matrix system - a set of matrices for each area served which cross tabulates employment in 201 industrial categories by 420 detailed occupations at specific points in time for use in formulating current and future estimates of demands for labor by occupations, and

(3) occupational projections program - a methodology for preparing estimates and projections of labor requirements by occupations using consistent procedures in all areas.

Each of these elements is now operational. However, the occupational employment information generated in element (1) has not as yet been incorporated into the industry-occupation matrices. Instead the matrices are based upon updates of the occupational staffing patterns found in Florida in the 1970 census.

Forecasts of the demand for labor by occupations are made in a four step process. First the appropriate industry-occupation matrix is selected for the current period and a vector of wage and salary employment data by industries is obtained from the State employment security agency. These data are then adjusted to reflect total employment, i.e. those not covered by social security are estimated and included and other adjustments to reflect multiple job holding and the like are made. Multiplying the vector of current employment by the industry-occupation matrix results in an estimate of current employment by occupations. Second, the future

demands for labor by occupations over some forecasting horizon of "t" years are decomposed into two elements, replacement and growth. The replacement demand for labor results from death, retirement, occupational mobility, out migration, and similar forces which result in exit from the labor market. BLS has developed a series of occupationally specific death and retirement rates for each state to be used in estimating the replacement demand for labor. The death and retirement rates are estimated from actuarial tables of working life, and the replacement demands are estimated by multiplying the rates by the current levels of employment by occupations. Third, the expansion demand for labor is the result of economic growth. In the BLS methodology to forecast the expansion demand the analyst utilizes a simple regression equation for each of the 201 industrial categories of the form below.

$$(1)\quad E_{ijt} = f\,(E_{iust},\ POP_{jt},\ Time)$$

where: E = employment, POP = population

Time = time, i = industry index,

j = regional identifier, t = time index,

US = U.S. economy

Then the industry-occupation matrix used previously is updated to reflect changes in occupational staffing patterns over the forecast horizon. When this updated matrix is multiplied by the vector of projected industrial employment, a vector of future occupational demands is produced which represents the expansion demand element. Finally, the total future demand for labor by occupations is the sum of the replacement and expansion demands.

The supply component of the OIDS system represents an advancement over the OES program which did not include a methodology for estimating occupational supplies. The current supply of labor in a particular occupation is a dynamic phenomenon analogous to a large lake with tributaries and outlets which represent potential entry and exit paths from the occupation.

Figure 4.1.—Occupational Sources of Entry and Exit

| Entry | Current | Exits |
|---|---|---|
| - Formal training<br>a. schools: public and private<br>b. colleges<br>c. federal manpower programs<br>- On-the-job training and upward mobility<br>- Inmigration<br>- Occupational migration<br>- Exmilitary<br>- Other | - Employed<br>- Unemployed<br>- Those not in labor force | - Deaths<br>- Retirement<br>- Occupational mobility<br>- Outmigration<br>- Other separations |

As Figure 4.1. indicates the sources of entry and exit from an occupation are many and varied. OIDS attempts to provide accurate numbers for each of the items indicated in Figure 4.1. for the current and future time periods. For some items this is relatively easy while for others, it is difficult or impossible. We examine these items below.

The effect of data limitations can be illustrated by examining each column in Figure 4.1. Beginning with the column labelled "current", we note that data are available on those currently employed in a particular industry. Furthermore, data are also available on the number of workers employed in broad occupational groups, i.e. white collar workers, technical and kindred workers, operatives, and the like. However, consistent data series disaggregated by detailed occupations are typically available only for census years. Yet, it is precisely this type of detailed occupational employment data that is relevant for manpower planning. Fortunately, detailed occupational data can be constructed from employment data by industry. The procedure involves the application of the industry-occupation matrix

to the industry employment data producing estimates of occupational employment.

Even though current period occupational employment data can be constructed, the two other categories of potential current supply are far more difficult to measure. First, data on the number of people unemployed by occupations is not presently available. The registration records for unemployment insurance are a potential source for unemployment information by occupations, and research in this area is now underway (Strickland, 1976) but at the present time the records are not organized for this purpose. Current procedures do not allow for a tracking of each insuree over time, so the use of monthly data to construct a quarterly or annual data series on the number of unemployed by occupations will result in substantial double or triple counting.

Second, the most difficult dimension of measuring the current occupational supply of labor is those who are not now in the labor force because of family responsibilities or the desire for leisure time. However, if relative wage rates or other economic conditions should change, they may enter the labor force. Thus, this is a potentially large source of occupational supply, and it should be measured to insure accurate long term forecasts. Unfortunately, there is no data on this source of potential supply.

There are six major sources of entry into an occupation as Figure 4.1. shows. Formal training is skill acquisition or the augmentation of the human capital of the enrollees. It is distinguished from on-the-job training because no production takes place. The data on this aspect of occupational entry, formal training, is quite good. Both schools and the federal government keep records on program graduates. However, complete data from private schools is not now available, and it has proven difficult to put the programs developed by various institutions on a common basis suitable for comparisons.

A second source of entry is on-the-job training. On-the-job training (OJT) is difficult to define and harder to measure. OJT is training which occurs while the individual is engaged in production. Such programs range from highly structured regimens to very informal "watch your neighbor" approaches. OJT is typically industry, firm, and task specific in contrast to formal training which even when highly concentrated in one area, is more general than OJT and rarely is task and firm specific. Data here is almost nonexistent because "most job skills currently in use have been learned on-the-job!" (Stevens, 1976, p. 7; Writz and Goldstein, 1975.)

Migration both among occupations and between regions represents another important entry source. As we noted above, workers may respond to differences in relative earnings across regions or among occupations by migrating or changing occupations. This mobility is an important source of labor market adjustment. As Tarr and Campbell (1975, p. 213) noted, Florida's population has grown 4.77 times faster than that of the U.S. from 1940 to 1970, and inmigration has largely accounted for this differential. The skills possessed by these inmigrants are an important source of entry into any occupation and cannot be ignored. Data on these inmigrants and their occupations are only available every ten years in the Public Use Sample derived from the decennial census. However, Tarr and Campbell (1976) have made good progress in estimating the occupations of Florida's inmigrants.

Entrants from outside the labor force, especially exmilitary personnel, represent the sixth source of entry. We define this category as persons who are trained for a specific occupation but for various reasons have not been part of the labor force. Many in this category are women who are reentering the labor force after their families have grown up. Women and exmilitary personnel who are outside the laobr market represent an important source of potential supply,

particularly in some occupations such as nursing, public school teaching, and commercial airplane pilots and crews. Here too data is almost nonexistent.

The final category which affects occupational supply is exits. BLS has developed procedures for estimating deaths and retirements by occupations (discussed above in terms of replacement demands). While this procedure has limitations (i.e. separation rates are not occupation specific), it does produce reasonably accurate results for separations. However, no data is available on occupational mobility or separations for other reasons.

While Tarr and Campbell (1976) have made good progress in implementing the supply component of OIDS, it still remains incomplete. As we noted above occupationally specific data on those unemployed, OJT, exmilitary, and those outside the labor force are not available. Furthermore, graduates of various formal training programs have not as yet been put on a common basis. Thus, with the supply side incomplete it has been impossible to implement the interface component of OIDS at this time.

We noted at the outset of this chapter that OIDS provides the best labor market information now available for needs assessments of VTE programs. This conclusion will be supported by the data in Section 4.4. Above we have described the operations of the OIDS system. Next we examine some of the methodogical limitations of OIDS.

Methodological Limitations of OIDS

The most basic methodological limitation of the OIDS approach is that it uses a technological or requirements approach to future expansion demand for labor. As described in our Phase One report this technological approach assumes that to produce some level of future output requires a specific mix or "requirements" of labor by occupations. This approach implicitly assumes that all relative prices and wages will remain constant. Thus, the concept is technological rather than economic.

Following Ahmed and Blang (1973) we can express the OIDS approach to forecasting the demand for labor by occupations in a simple mathematical form which sheds light on this issue.

$$(1)\quad L_i = \sum_{j=1}^{J} \left(\frac{L_{ij}}{L_j}\right) \cdot \left(\frac{L_j}{Q_j}\right) \cdot \left(\frac{Q_j}{P_j}\right)$$

where: $L_i$ = labor employed in occupation i

$\frac{L_{ij}}{Lj}$ = the occupation structure in industry j, or the industry-occupation matrix for all J

$\frac{L_j}{Q_j}$ = average productivity of labor in industry j

$Q_j$ = value of output in industry j

$P_j$ = price per unit of output in industry j

In this form we can readily see that $\frac{L_j}{Q_j}$ and $\frac{Q_j}{P_j}$ are assumed to be constant or to change in perfectly offsetting ways over the forecast period. Thus, substitution between labor and other inputs and among occupations is precluded.

While these assumptions of the requirements approach are highly restrictive and unrealistic, they are useful approximations. The points we wish to stress are:

(a) the forecasts should be used with sympathetic understanding of their limitations, and

(b) the assumptions are, from a practical point of view, necessary to produce occupational forecasts.

The demand projections are subject to a second limitation. The estimates of replacement demands are based upon a Florida specific actuarial table. However, this procedure is not occupationally specific nor does it allow for other forms of job leaving such as outmigration from the region or changes in occupations.

A final methodological problem relates to the supply component. As we mentioned this element is not complete as yet. In our Phase One report we

experimented with a shift-share procedure for directly estimating the occupational supply of labor as an alternative to the OIDS approach. However, this approach also has serious methodological and empirical weaknesses. After a careful analysis of our supply side projecting technique and after a further test in the Tampa Bay area, we have decided to abandon the approach as unworkable. Methodologically speaking our supply side shift-share was analogous to the demand side procedures since both used the same U.S. projections as their driving elements. Empirically, the existing data is not rich enough to support a proper supply side analysis.

Thus, at this point in time we have little to offer on the supply side of the market. However, we do examine VTE program outputs relative to the total markets for particular occupations in section 4.5. This information should be more valuable than supply estimates of questionable validity.

4.3. Uses and Abuses of Manpower Information

Our fieldwork in the Tampa Bay area (which is discussed in detail in Chapter 5) revealed that the misunderstandings and abuses of labor market information chronicaled in our Phase One report also exist in the Tampa Bay area. Thus, it is useful to review some of the more important labor market concepts discussed in our first report. In this way we hope more effective use can be made of labor market information.

First, we note that there is a great deal of confusion surrounding the basic concepts of employment and demand. Demand can be understood as effective demand-those workers possessing particular skills which employers are willing and able to hire. By contrast, employment is the outcome of interacting demand and supply forces. This distinction is important because demand and employment are not synonymous. The total number of workers by skills which employers are willing and able to hire at the given wage rates, the effective demand, may be greater or less than the available number of people with the requisite skills available for

employment. This interaction of supply and effective demand often results in some lesser number actually finding employment.

Second, we must also distinguish between a projected job opening and a job vacancy since these terms are also not synonymous. A job vacancy is a position which a manager is actively seeking to fill. By contrast, a projected job opening is a rather amorphous concept to which various analysts have attached alternative definitions. Hansen (1965, p. 10-20) has arranged these alternative definitions of job openings into five useful categories:

1. Requirements: Projections of the levels of economic activity in the commodities and service markets are used to derive demands for labor by occupations.
2. Availables: This represents the forecasted numbers of qualified workers who can fill the requirements projected in number one. This is the supply of labor by occupations.
3. Outcomes: The difference between requirements and availables represents the excess demand or supply of labor possessing particular skills. This concept does not provide for feedback or other labor market adjustments in the requirements or availables due to knowledge of labor market imbalances.
4. Outcomes with responses: Here the responses of employers and workers to the projected labor market conditions are allowed for, and the initial supply and demand assumptions revised.
5. Actuals: This final concept moves beyond the outcomes with responses and encompasses the effects of altered manpower training programs including vocational and technical education.

This concept of projected job openings is important in assessing vocational and technical education needs. Note that the categories of: outcomes, outcomes with responses, and actuals involve comparing the supplies of labor against the demands.

Another important concept is that of the internal labor market. The internal labor market refers to the "labor market" within a particular firm as opposed to the external labor market where all firms and workers compete to fill or find job openings. This is an important distinction for VTE planning, because VTE is oriented towards training which will produce immediate job placements for its students.

We must recognize that labor markets are not perfectly competitive processes. In addition to the problem of imperfect information, there are many institutional impediments to the rapid adjustment of demands and supplies in the labor market. A major institutional impediment is the existence of limited ports of entry for employment in firms (Stevens, 1976, p. 26-27). Many jobs in the economy are not open to every qualified applicant; internal promotions or transfers within a firm, i.e. internal recruitment procedures, are used to fill many job openings above the entry level. Doeringer and Piore (1971) explain why this internal labor market forms to close off competition from the external labor market. However, what is relevant for our purposes here is the existence of internal labor markets, and that these ports are concentrated in lower level jobs from which workers can advance through the internal occupational hierarchy.

Many analysts believe that most skill training takes place on-the-job within the internal labor market of the firm. Since many jobs are task and establishment specific, formal training is not possible. Thus, advancement up the occupational ladder often depends upon successful on-the-job training results.

The existence of internal labor markets should affect the type of VTE programs offered. With limited ports of entry, VTE programs need to provide graduates with the appropriate readily marketable skills to pass through those ports. In addition, since promotion up the occupational job ladders are most often internal

to the firm, VTE graduates need a broad enough background to provide sufficient flexibility for promotion to new occupations.

This brings us to a fifth important concept, the educational requirements necessary for employment. There is a running controversy over whether education in general and VTE in particular directly increases productivity of graduates, or whether such education is only a screening device used by employers. Denison (1974), Mincer (1974), and other argue that education contributes directly to productivity while Edwards et al. (1975), Arrow (1973), Stiglitz (1974), and others contend that education has little affect on productivity, but is important for screening potential employees. Stevens (1976, p. 28) remarks, "It matters very much whether education's major contribution is direct enhancement of productivity, or a screening of potential productivity. One would not necessarily expect an optimal education technique which imparts direct productivity development to also be optimal in performing screening functions."

With this rather lengthy introduction we are prepared to examine the projections. At this juncture we wish to emphasize to the reader that our purose is to develop and test methodologies. Thus, our projections should only be used cautiously, and we suggest that those responsible for VTE program planning replicate our procedures and modify the outcomes according to current conditions and using judgement where needed.

## 4.4. 1980 Occupational Projections for the Tampa Bay Area

Below we present two sets of projections. The first set are forecasts of employment by industry groups for 1980. In this first set there are two forecasts:

(1) one based upon the OIDS methodology outlined above, and

(2) another derived from a fully detailed econometric model of the Tampa Bay area.

These two forecasts of employment by industries are then used as inputs to the industry-occupation matrix for the Tampa Bay area obtained from OIDS. The second

set of projections show 1980 occupational employments. Here three alternatives are shown: (1) based on the OIDS methodology,

(2) derived from the econometric model, and

(3) formulated by a direct application of the shift-share methodology to the 1970 occupation structure.

1980 Employment by Industry Groups

As a prior step to formulating occupational forecasts, we first had to project employment by industries to use as a vector of inputs to the industry-occupation matrix. It is useful to compare two alternative procedures, the OIDS procedure described above and an econometric model. Since we described the OIDS procedure above, we shall not repeat that discussion here. We note though that the OIDS projections are on a "total" employment basis which include part-time workers and make other adjustments. In addition, the OIDS projections we reprot are for the SMSA, Pinellas, Pasco, and Hillsborough counties. By contrast, our econometric forecasts are for wage and salary employment for the Tampa Bay area which includes Manatee County.

The econometric model we developed represents the most sophisticated and most expensive approach to employment forecasts we examined. The model is a system of 150 simultaneous equations estimated from quarterly time series data, 1970:1 through 1977:1. The model is conceptually similar to the one constructed for the Jacksonville area in our Phase One report. To review a bit, the economic theory which is the foundation for our econometric model can be explained quite simply. We can view any region's economy as being composed of two basic categories of economic activity: a) those oriented towards serving local markets termed nonbasic industries, and b) those oriented towards serving nonlocal or external markets called basic industries. The forces which determine the level of economic activity in the basic industries are largely exogenous to the region and depend upon such things as national demand, national income, interest rates, and relative prices. Sales of basic goods and services result in an inflow of income from outside the region and the continuation of expansion of employment in these basic industries. The inflow of income from outside the region results in demands for locally provided

goods and services, demands for the outputs of nonbasic industries in our terminology. These nonbasic industries can be further subdivided into business-serving and household-serving groups. The business-serving group provides ancillary services and raw materials to the export industries, such as office supplies, transportation services, legal advice, and the like. The household-serving industries fulfill the needs of households including food, shelter, clothing, and entertainment.

For the purpose at hand, a complete econometric model is not necessary. A truncated model which focuses on employment is more relevant and less costly to construct for forecasting the expansion demand for labor. A schematic diagram of the model is provided in Figure 4.2. The model provides quarterly forecasts of employment over the planning horizon.

Figure 4.2.—Schematic Diagram of the Econometric Model for Employment

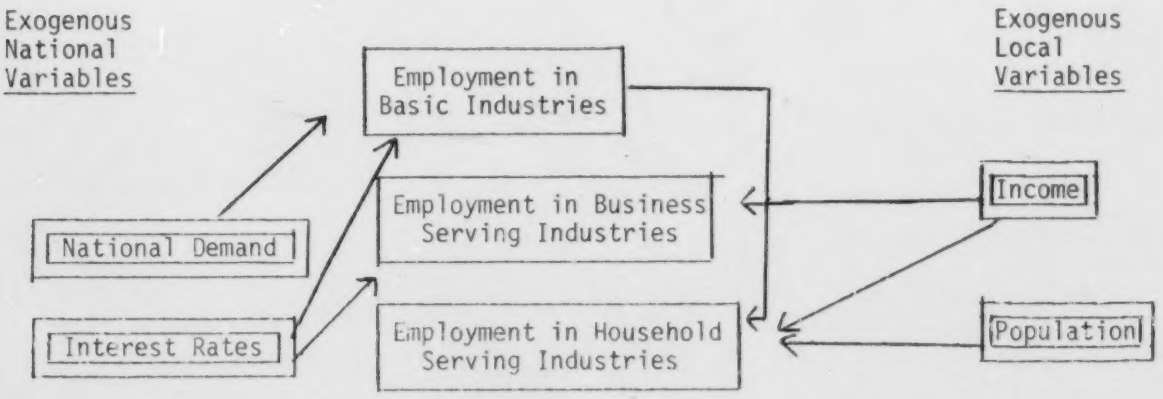



Table 4.1 shows the actual 1970 employment in the area, 1976 employment, and the two projections for 1980.

Although the conceptual and geographic bases for the projections differ, there is a very close correspondence between the two sets of 1980 industrial employment projections as Table 4.1. shows. The total employment projections differ by only 5 percent. Furthermore, the differences across industry groups are also generally less than 5 percent. Two exceptions to this generalization stand out,

Table 4.1.—Tampa Bay Area Employment by Industry Groups*

| Industry | 1970 Employment | 1976 Employment | 1980 OIDS | 1980 Econometric |
|---|---|---|---|---|
| Total | 359,300 | 460,800 | 528,400 | 527,460 |
| Agriculture and other n.e.c. | 8,600 | 8,600 | 8,500 | 10,920 |
| Mining | 100 | 100 | 100 | 550 |
| Construction | 31,600 | 40,000 | 45,700 | 37,450 |
| Manufacturing | 55,700 | 65,200 | 71,600 | 76,320 |
| Durables | (30,600) | (37,500) | (42,100) | (43,890) |
| Fabricated metals | (6,300) | (7,800) | (8,700) | (9,120) |
| Transportation equipment | (4,200) | (4,700) | (5,100) | (5,500) |
| Nondurables | (25,100) | (27,700) | (29,500) | (32,420) |
| Food and kindred products | (9,400) | (9,800) | (10,100) | (11,470) |
| Paper and allied products | (1,400) | (1,200) | (1,100) | (1,400) |
| Chemicals | (3,400) | (3,200) | (3,100) | (3,750) |
| Transportation, communication, utilities | 22,800 | 29,700 | 34,400 | 31,000 |
| Communication | (6,100) | (9,100) | (11,200) | (9,500) |
| Transportation | (11,000) | (13,600) | (15,200) | (14,200) |
| Utilities | (5,600) | (7,000) | (8,000) | (7,300) |
| Wholesale trade | 21,500 | 29,600 | 35,000 | 34,300 |
| Retail trade | 73,500 | 92,800 | 105,600 | 107,700 |
| Finance, insurance, real estate | 19,000 | 28,100 | 34,100 | 37,000 |
| Finance | 7,500 | 11,200 | (13,700) | (14,700) |
| Insurance | 6,300 | 9,200 | (11,100) | (12,100) |
| Real estate | 5,200 | 7,700 | (9,300) | (10,100) |
| Services | 110,600 | 145,600 | 169,000 | 129,000 |
| Government | 15,900 | 21,000 | 24,400 | 63,210 |
| Federal | (6,100) | (7,200) | (7,800) | (20,250) |
| State | (1,200) | (1,900) | (2,400) | (6,320) |
| Local | (8,600) | (11,900) | (14,100) | (36,660) |

*Figures may not total due to rounding.

services and government. However, the differences here are due to differences in definitions as to what belongs under service and what belongs under government.

We hasten to add that that close correspondence of these forecasts is not a special case. Other research by Roberts and Fishkind (1977) has shown that econometric forecasts of employment for the state as a whole also corresponds closely to BLS projections.

One conclusion we can draw from Table 4.1. is that in the context of VTE needs assessment the costs of implementing an econometric model are not justified. The BLS procedures are adequate for VTE planning and evaluation purposes.

1980 Occupational Forecasts

We have developed two sets of occupational forecasts, one based upon our econometric model reported in Table 4.1. and another formulated through a shift-share approach. The shift-share projection is a direct approach to occupational forecasting because it does not involve the use of the industry-occupation matrix. This procedure is relatively easy to implement, and the algorithm is shown below:

$$(2)\quad O_{ij_{80}} = \frac{O_{ij_{70}}}{O_{iUS_{70}}} * O_{iUS_{80}} + \left[\frac{O_{ij_{70}} - O_{ij_{60}}}{O_{iUS_{70}} - O_{iUS_{60}}}\right] * O_{iUS_{80}}$$

where: $O_i$ = employment in occupation i,

70 = 1970

80 = 1980

j = region identifier

US = U.S. economy

The occupational employment projections are shown in Table 4.2. We show the actual 1970 occupational employment levels, OIDS, shift-share, and econometric projections. The OIDS and econometric projections are very similar as we expected given the close correspondence between the industry employment forecasts of these

Table 4.2.—Tampa Bay Area Occupational Projections for 1980

| Occupational Titles | 1970 Employment | OIDS | Shift Share | Econometric |
|---|---|---|---|---|
| Total, all occupations | 359,320 | 528,400 | 472,000 | 527,460 |
| Professional, technical, kindred | 43,870 | 71,950 | 69,330 | 69,210 |
| Engineers, technical | 3,660 | 5,340 | 6,800 | 5,600 |
| Life and physical scientists | 410 | 700 | 500 | 500 |
| Engineers, science technicians | 3,310 | 5,590 | 5,000 | 5,400 |
| Medical workers, except technical | 6,540 | 11,550 | 10,750 | 8,900 |
| Health technology | 1,450 | 3,610 | 3,000 | 3,300 |
| Technicians except health | 610 | 1,150 | 2,000 | 2,100 |
| Computer specialists | 650 | 1,290 | 1,000 | 1,360 |
| Teachers | 12,920 | 17,800 | 17,000 | 17,200 |
| Writers, artists, entertainers | 3,650 | 6,490 | 3,500 | 6,850 |
| Other profession | 10,280 | 17,540 | 19,000 | 18,000 |
| Managers, officials, proprietors | 37,940 | 62,510 | 54,600 | 59,440 |
| Buyers, sales, loan managers | 7,030 | 11,810 | 12,800 | 11,800 |
| Administrators, pub. inspectors | 2,830 | 4,540 | 4,000 | 4,840 |
| Other managers | 28,080 | 46,150 | 37,800 | 42,800 |
| Sales workers | 29,390 | 45,080 | 42,700 | 45,780 |
| Clerical workers | 63,500 | 105,090 | 89,200 | 112,700 |
| Stenographers, typists, secretaries | 18,300 | 32,670 | 29,000 | 37,200 |
| Office machine operators | 2,100 | 3,160 | 2,700 | 3,400 |
| Other clerical workers | 43,100 | 69,250 | 57,500 | 72,100 |
| Craftsmen, foremen, kindred | 50,880 | 73,360 | 62,400 | 72,080 |
| Construction craftsmen | 18,980 | 27,940 | 24,000 | 23,780 |
| Foremen, nec. | 5,700 | 7,660 | 8,700 | 8,700 |
| Metalworking craftsmen | 2,470 | 3,610 | 3,070 | 3,050 |
| Mechanics, repairmen, installers | 12,660 | 17,920 | 15,520 | 20,650 |
| Printing trade craftsmen | 1,520 | 2,170 | 1,850 | 2,500 |
| Transportation, pub. util. craftsmen | 2,920 | 4,970 | 4,200 | 5,100 |
| Other craftsmen | 6,360 | 9,090 | 5,300 | 8,300 |

Table 4.2.—Tampa Bay Area Occupational Projections for 1980
(Continued)

| Occupational Titles | 1970 Employment | OIDS | Shift Share | Econometric |
|---|---|---|---|---|
| Operatives | 46,490 | 58,250 | 52,000 | 59,300 |
| Operatives, except transport | 33,360 | 41,160 | 37,500 | 40,810 |
| Semiskilled metalworking | 3,220 | 4,680 | 4,260 | 4,560 |
| Semiskilled textile | 100 | 150 | 130 | 100 |
| Semiskilled packing, inspecting | 4,950 | 6,210 | 5,660 | 7,500 |
| Other operatives, except transport | 25,090 | 30,120 | 27,450 | 28,650 |
| Transport equipment operatives | 13,130 | 17,090 | 14,500 | 18,500 |
| Service workers | 59,780 | 80,210 | 70,200 | 75,350 |
| Cleaning service workers | 9,530 | 14,920 | 13,000 | 16,000 |
| Food service workers | 17,760 | 24,900 | 19,000 | 23,100 |
| Health service workers | 8,050 | 14,950 | 11,500 | 13,250 |
| Personal service workers | 7,380 | 11,270 | 14,000 | 9,200 |
| Protective servie workers | 4,860 | 7,700 | 6,250 | 8,700 |
| Private household workers | 12,000 | 6,470 | 6,500 | 5,100 |
| Laborers, except farm | 22,490 | 28,140 | 26,500 | 30,100 |
| Farmers and farmworkers | 4,990 | 3,840 | 5,100 | 3,500 |
| Farmers and farm managers | 1,260 | 1,050 | 1,600 | 1,000 |
| Farm laborers, farm foreman | 3,730 | 2,800 | 3,500 | 2,500 |

two procedures (shown in Table 4.1.). The main differences in the occupational forecasts between OIDS and the econometric model occur in construction craftsmen and service workers. These differences can be traced back to differences in the underlying industrial employment forecasts since both procedures utilized the same industry-occupation matrix to produce occupational forecasts.

The shift-share forecasts are generally 10 percent below both the econometric and OIDS projections. This is true in the aggregate and for most of the detailed items shown in Table 4.2. It is interesting to note that the shift-share approach can provide occupational forecasts which are close to those of OIDS at a lower cost and without use of the industry occupation matrix. This procedure may have some usefulness when time is short and resources for a more proper analysis are unavailable.

## 4.5. Implications for Vocational and Technical Education

The occupational forecasts presented above provide important labor market information for VTE needs assessment. However, this information can be made more useful by relating it to VTE program codes.

As we noted in our Phase One report, one of the most complex and often-mentioned problems facing VTE planners is how to use available occupational information to set planning priorities. Occupational forecasts are difficult to interpret due to the occupational and geographic mobility of workers as labor markets adjust to discrepancies between supplies and demands and due to limitations in the forecasting art. However, even more important is the fact that the occupational classification system differs significantly from the educational classification system. This makes a matching of labor market trends to VTE program outputs difficult.

Unfortunately, the existing classification systems do not permit a clear cut mapping of categories from one system to another. The major barrier which precludes a perfect meshing of manpower forecasts and educational programs is that the various classification systems were developed for different purposes. The VTE classification codes were developed to: (a) standardize the reporting of educational statistics,

(b) facilitate educational planning, and (c) simplify terminology. Since instructional programs are designed to provide skill training in a number of related subjects, they often include a variety of occupations. By contrast, the occupational classification system used in manpower forecasting under the OES program is based on the Census Bureau's classification scheme. This system was formulated to identify particular jobs which require extensive training or in which a large number of people are employed.

The Bureau of Labor Statistics has been sensitive to this problem, and they have recently completed an important study in this regard. A revised supplement no. 3 to the four volume *Tomorrow's Manpower Needs* (1969) entitled *Matching Occupational Classifications to Vocational Education Program Codes* (1975) has been published. The document provides conversion tables for translating occupational titles into VTE program codes. However, the report notes that the conversion tables are "... only a temporary aid for those concerned with matching the various occupational classification systems. The final clarification of occupational classification systems awaits the completion of the Standard Occupational Classification System sponsored by the Office and Management and Budget (p. 2)."

The BLS matching procedure utilizes the *Dictionary of Occupational Titles* (U.S. Department of Labor, 1965) classification system as a bridge between the OES matrix information and VTE program codes. The linkage between VTE program codes and the *Dictionary of Occupational Titles* was worked out in 1969 (*Vocational Education and Occupations*). Since the OES matrix categories are nearly idential to those in the *Dictionary of Occupational Titles*, no conversion problems occur with regard to linking the OES categories and those in the *Dictionary of Occupational Titles*. This BLS publication (1975) provides an effective crosswalk between VTE program codes and the OES matrix. We shall make use of this crosswalk in our analysis below.

Some caveats are in order before we present our projections and their implications for VTE programs. First, we remind the reader that our purpose here is to develop a needs assessment methodology. We illustrate our methodology and provide a test of it using actual data from the Tampa Bay area labor market much as we did for the Jacksonville labor market area. Thus, as before our projections should be viewed as illustrative. We believe that the forecasted trends are useful and reasonably accurate. However, further testing and refinement is called for before they can be safely used for program planning. Second, the basic underlying assumption of our forecasting procedures are that past trends are a reasonable guide to future events. Both our demand and supply forecasts are based upon the assumption that no dramatic new developments will occur over the forecasting horizon. Third, the BLS conversion table is still rather crude as the experienced VTE administrator will quickly notice. The table needs to be further disaggregated along VTE program lines to be more useful.

Table 4.3. relates our occupational projections to VTE program codes. Column 1 of the table lists the 1976 occupational employment in the region as related to VTE program codes. This data was taken from OIDS data published by the Florida Department of Commerce (1976).

In column 2 we show replacement needs. This data was also taken from OIDS. It was developed using the BLS procedures discussed above.

Columns 3 and 4 show two alternative estimates of expansion demands. These were generated as the differences between the forecasted levels of employment, shown in columns 5 and 6 respectively, and 1976 employment levels (column 1).

Columns 5 and 6 contain two series of employment projections. In column 5 we have taken the shift-share projections from Table 4.2. and related them to VTE program codes. The econometric forecast from Table 4.2. is translated into VTE

program codes in column 6. Since the econometric forecast was so similar to the OIDS projections, we did not repeat this exercise for the OIDS projections.

Columns 7 and 8 show VTE program outputs. Column 7 lists actual 1976 program outputs as available from the Florida Department of Education. In column 8 we show projected program graduates. These projections were made by simple linear extrapolations augmented by an analysis of program enrollments in grades 10-12.

To illustrate the use of the table we examine a few distributive education occupations. For example, in 1976 2,760 people were estimated to be employed in advertising services. By 1980 the econometric forecast (column 6) shows employment of 3,529. Thus, expansion needs are 769 (column 4) and replacement needs equal 110 for a total of 879 job openings projected by 1980. Of these VTE programs can be expected to provide approximately 190 trained people or 22 percent of the projected need.

As another example, take finance and credit. Here the econometric model shows slow growth, and expansion demands equal -173. Replacement demands total 130 for a decline of 43 projected job opportunities. VTE programs may produce between 55-60 new graduates per year in this area given current programs.

These examples illustrate the possible uses of labor market information which is related to VTE program codes. We believe such information can be a valuable aid in VTE needs assessment.

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| | Agricultural | | | | | | | | |
| 01.01 | Production | 4,320 | 140 | 98 | 115 | 4,418 | 4,205 | 36 | 40 |
| 01.0101 | Animal science | 4,460 | 140 | -628 | -789 | 3,832 | 3,671 | 65 | 73 |
| 01.0104 | Farm business management | 120 | 0 | 223 | -100 | 343 | 220 | NA | NA |
| 01.02 | Agricultural supplies & services | NA | 0 | | | 41 | 8 | NA | NA |
| 01.0202 | Feeds | 310 | 10 | -67 | -7 | 243 | 303 | NA | NA |
| 01.0299 | Agricultural supplies & services, other | 770 | 30 | -504 | -44 | 266 | 726 | NA | NA |
| 01.0301 | Agricultural power & machinery | 170 | 0 | -49 | -73 | 121 | 97 | 70 | 78 |
| 01.0401 | Food products | 330 | 0 | 220 | 98 | 550 | 428 | NA | NA |
| 01.0504 | Landscaping | 6,070 | 260 | -2,420 | -3,387 | 3,650 | 2,683 | 27 | 30 |
| 01.0505 | Nursery operation & management | 1,810 | 50 | 747 | 318 | 2,557 | | 71 | 79 |
| 01.99 | Agriculture, other | 690 | 50 | 91 | 769 | 781 | 372 | 90 | 101 |
| | Distributive Education | | | | | | | | |
| 04.01 | Advertising services | 2,760 | 110 | -10 | -69 | 2,750 | 3,529 | 45 | 48 |
| 04.02 | Apparel and accessories | 14,840 | 930 | 2,529 | 3,026 | 17,639 | 15,139 | 14 | 15 |
| 04.03 | Automotive | 9,880 | 330 | -355 | -173 | 9,525 | 12,906 | 13 | 14 |
| 04.04 | Finance and credit | 3,580 | 130 | -1,858 | -173 | 1,722 | 3,407 | 55 | 59 |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 04.05 | Floristry | 640 | 30 | 174 | -233 | 814 | 407 | NA | NA |
| 04.06 | Food distribution | 28,850 | 1,100 | -4,394 | 9,744 | 24,456 | 38,594 | NA | NA |
| 04.07 | Food services | 4,500 | 190 | -1,755 | 462 | 2,745 | 4,962 | NA | NA |
| 04.08 | General merchandise | 33,150 | 1,640 | 4,179 | 8,991 | 37,329 | 42,141 | 733 | 789 |
| 04.09 | Hardware, building materials, farm & garden supplies | 11,770 | 390 | 240 | 7,031 | 12,010 | 18,801 | NA | NA |
| 04.10 | Home furnishings | 3,730 | 130 | 387 | 64 | 4,117 | 3,794 | NA | NA |
| 04.11 | Hotel and lodging | 4,250 | 200 | 1,822 | 10,981 | 6,072 | 15,231 | 286 | 308 |
| 04.12 | Industrial marketing | 13,050 | 380 | -2,179 | 9,398 | 10,871 | 22,448 | NA | NA |
| 04.13 | Insurance | 4,180 | 120 | -158 | -2,790 | 4,022 | 1,390 | 7 | 7 |
| 04.15 | Personal services | 5,140 | 320 | -552 | 610 | 4,588 | 5,750 | 64 | 69 |
| 04.16 | Petroleum | 4,740 | 120 | -2,397 | 2,461 | 3,343 | 7,201 | 2 | 2 |
| 04.17 | Real estate | 5,810 | 360 | -1,673 | 5,730 | 4,137 | 11,540 | NA | NA |
| 04.19 | Transportation | 7,060 | 190 | 764 | 3,527 | 7,824 | 10,587 | NA | NA |
| 04.20 | Retail trade, other | 9,520 | 280 | 4,246 | 11,507 | 13,766 | 21,027 | NA | NA |
| | Home Economics | | | | | | | | |
| 09.0102 | Care and guidance of children | 10,950 | 520 | -3,332 | -3,130 | 7,618 | 7,820 | 177 | 193 |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 09.0202 | Clothing, management, production, & services | 2,610 | 130 | -181 | 502 | 2,429 | 3,112 | 335 | 366 |
| 09.0203 | Food management, production, & services | 3,930 | 150 | -1,536 | -1,514 | 2,394 | 2,416 | 172 | 188 |
| 09,0205 | Institutional & home management & supporting services | 7,640 | 450 | 6,219 | 7,363 | 13,859 | 15,003 | 27 | 29 |
| | Health Occupations | | | | | | | | |
| 07.0101 | Dental assisting | 2,820 | 210 | -184 | 0 | 2,636 | 2,820 | 73 | 80 |
| 07.0102 | Dental hygiene | 280 | 30 | -7 | 1,193 | 273 | 1,473 | NA | NA |
| 07.0201 | Cytology | 160 | 0 | -23 | -115 | 137 | 45 | NA | NA |
| 07.0202 | Histology | 1,340 | 80 | -1,065 | 133 | 275 | 1,473 | NA | NA |
| 07.0203 | Medical laboratory assisting | 1,340 | 80 | -1,065 | 133 | 275 | 1,473 | 25 | 27 |
| 07.0301 | Nursing, associate degree | 5,360 | 370 | 1,375 | -895 | 6,735 | 4,465 | NA | NA |
| 07.0302 | Practical vocational nursing | 4,060 | 310 | 1,260 | 589 | 2,800 | 3,471 | 906 | 998 |
| 07.0303 | Nursing assistance | 9,690 | 680 | 1,051 | 6,224 | 8,639 | 3,466 | 492 | 542 |
| 07.0304 | Psychiatric aide | 6,750 | 430 | 11 | -5,812 | 6,761 | 938 | NA | NA |
| 07.0305 | Surgical technician | 510 | 30 | -51 | 272 | 459 | 782 | 30 | 33 |
| 07.0402 | Physical therapy | 2,420 | 170 | -232 | -978 | 2,188 | 1,442 | NA | NA |
| 07.0601 | Opthalmic dispensing | 370 | 10 | -117 | -226 | 253 | 144 | 13 | 14 |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 07.0902 | Electrocardiograph technician | 510 | 30 | -56 | 262 | 454 | 772 | NA | NA |
| 07.903 | Inhalation theraphy | 610 | 40 | -145 | -459 | 465 | 151 | 25 | 27 |
| 07.0904 | Medical assistant, office | 1,750 | 130 | -87 | -469 | 1,663 | 1,281 | 13 | 14 |
| 07.039906 | Health services | NA | NA | NA | NA | NA | NA | 307 | 338 |
| 07.090000 | Health occupations | NA | NA | NA | NA | NA | NA | 90 | 99 |
| 07.090700 | Medical emergency | NA | NA | NA | NA | NA | NA | NA | NA |
| | Office Occupations | | | | | | | | |
| 14.0101 | Accountants | 2,450 | 120 | -764 | 652 | 1,686 | 3,102 | 191 | 207 |
| 14.0102 | Bookkeepers | 10,590 | 670 | 255 | 3,881 | 10,845 | 14,471 | 393 | 427 |
| 14.0103 | Cashiers | 7,800 | 590 | -333 | 1,886 | 7,467 | 9,686 | NA | NA |
| 15.0104 | Machine operators, billing, bookkeeping | 1,310 | 90 | 3,822 | 1,010 | 5,132 | 2,320 | NA | NA |
| 14.0105 | Tellers | 1,780 | 130 | -69 | -1,025 | 1,711 | 755 | NA | NA |
| 14.0201 | Computer & console operators | 2,690 | 120 | 492 | 1,563 | 3,182 | 4,253 | 334 | 363 |
| 14.020201 | Keypunch & coding equipment operators | 830 | 50 | 934 | 367 | 1,764 | 1,197 | NA | NA |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 14.0203 | Programmers | 1,950 | 50 | -16 | 574 | 1,934 | 2,524 | NA | NA |
| 14.0204 | Systems analysts | 390 | 10 | -38 | 132 | 352 | 522 | NA | NA |
| 14.302 | File clerks | 1,860 | 130 | 1,285 | 601 | 3,145 | 2,461 | 587 | 637 |
| 14.303 | General office clerks | 26,880 | 1,590 | 4,781 | 11,044 | 31,661 | 37,924 | 21 | 23 |
| 14.0399 | Filing, office machines, general clerical | 9,990 | 680 | 2,341 | 4,928 | 12,331 | 14,918 | NA | NA |
| 14.0401 | Communications systems clerks & operators | 2,880 | 230 | 124 | -214 | 3,004 | 2,666 | 177 | 192 |
| 14.0403 | Mail and postal clerks | 3,890 | 100 | -349 | 9,353 | 3,541 | 13,243 | NA | NA |
| 14.0404 | Mail preparing & handing machine operators | 280 | 20 | 49 | -20 | 329 | 260 | NA | NA |
| 14.0405 | Messengers & office boys & girls | 170 | 10 | -51 | 312 | 119 | 482 | NA | NA |
| 14.0406 | Receptionists | 3,140 | 260 | -587 | -629 | 2,553 | 2,511 | NA | NA |
| 14.0499 | Information & communication occupations, other | 10,770 | 700 | -5,515 | 6,429 | 5,255 | 17,199 | 8 | 9 |
| 14.0501 | Planning & production clerks | 490 | 10 | 25 | 207 | 515 | 697 | 132 | 143 |
| 14.0502 | Quality control clerks | 680 | 20 | -14 | -306 | 666 | 374 | NA | NA |

Table 4.3.--Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 14.0503 | Shipping & receiving clerks | 2,880 | 70 | -62 | 633 | 2,818 | 3,513 | NA | NA |
| 14.0504 | Stock & inventory clerks | 2,890 | 90 | 107 | 1,058 | 2,997 | 3,948 | NA | NA |
| 14.0505 | Traffic, rate, & transport clerks | 420 | 10 | 25 | 135 | 445 | 555 | NA | NA |
| 14.0602 | Interviewers & testing technicians | 650 | 30 | 1,843 | 2,591 | 2,493 | 3,241 | 159 | 173 |
| 14.0603 | Personnel assistants | 2,150 | 140 | 3,200 | 3,199 | 5,350 | 5,349 | NA | NA |
| 14.0702 | Secretaries | 20,890 | 1,620 | -3,058 | 7,567 | 17,832 | 28,457 | 544 | 591 |
| 14.0703 | Stenographers | 560 | 40 | 152 | 74 | 712 | 634 | NA | NA |
| 14.0801 | Administrative assistants | 1,100 | 40 | 761 | 1,691 | 1,861 | 2,791 | 415 | 451 |
| 14.0802 | Budget management analysts | 80 | 0 | -12 | 426 | 68 | 506 | NA | NA |
| 14.0804 | Data methods & systems procedures analysts | 210 | 0 | -18 | -54 | 192 | 156 | NA | NA |
| 14.0805 | Office managers & chief clerks | 3,110 | 130 | 1,341 | 1,534 | 4,451 | 4,644 | NA | NA |
| 14.0899 | Supervisory & administrative occupations, other | 540 | 20 | -41 | 369 | 499 | 909 | NA | NA |
| 14.0901 | Clerk typists | 5,470 | 450 | 2,114 | 2,712 | 7,584 | 8.182 | NA | NA |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 14.0902 | Typists | 5,520 | 450 | 2,112 | 2,666 | 7,632 | 8,186 | 966 | 1,049 |
| 14.99 | Office occupations, other | 4,210 | 200 | -1,202 | 2,227 | 3,008 | 6,437 | 237 | 259 |
| | Technical Education | | | | | | | | |
| 16.0105 | Chemical technology | 1,900 | 70 | -446 | 1,251 | 1,454 | 3,151 | 56 | 61 |
| 16.0107 | Electrical technology | 1,150 | 10 | 158 | -281 | 1,308 | 869 | NA | NA |
| 16.0108 | Electronic technology | 2,560 | 40 | 239 | -72 | 2,799 | 2,488 | 129 | 140 |
| 16.0113 | Mechnical technology | 1,620 | 40 | -341 | 708 | 1,279 | 2,328 | 27 | 29 |
| 16.0117 | Scientific data processing | 630 | 10 | -61 | 241 | 569 | 871 | NA | NA |
| 16.019903 | Drafting | 1,600 | 30 | 205 | 314 | 1,805 | 1,914 | 45 | 49 |
| 16.0203 | Food processing technology | 200 | 10 | -1 | 124 | 199 | 324 | NA | NA |
| 16.0601 | Commercial pilot training | 140 | 0 | 5 | -9 | 145 | 131 | NA | NA |
| | Trade & Industrial Occupations | | | | | | | | |
| 17.01 | Air conditioning | 1,620 | 30 | -514 | 309 | 1,106 | 1,929 | 172 | 186 |
| 17.0101 | Cooling | 1,620 | 30 | -514 | 309 | 1,106 | 1,929 | NA | NA |
| 17.0102 | Heating | 1,620 | 30 | -514 | 309 | 1,106 | 1,929 | NA | NA |
| 17.02 | Appliance repair | 1,090 | 20 | 2 | 165 | 1,092 | 1,255 | 30 | 32 |
| 17.0201 | Electrical appliances | 1,090 | 20 | 2 | 165 | 1,092 | 1,255 | NA | NA |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 17.0202 | Gas appliances | 1,090 | 20 | 2 | 165 | 1,092 | 1,255 | NA | NA |
| 17.03 | Automobile services | 550 | 20 | -166 | 548 | 384 | 1,098 | 22 | 24 |
| 17.0301 | Body & fender | 1,450 | 20 | -533 | -103 | 917 | 1,347 | 67 | 72 |
| 17.0302 | Mechanics | 9,750 | 180 | -1,162 | 3,489 | 8,588 | 13,239 | 416 | 450 |
| 17.0401 | Aircraft maintenance | 290 | 0 | 120 | 1,893 | 410 | 2,183 | NA | NA |
| 17.0402 | Aircraft operations | 250 | 10 | 66 | 157 | 316 | 407 | NA | NA |
| 17.0403 | Ground operations | 110 | 0 | 4 | 856 | 114 | 966 | NA | NA |
| 17.06 | Business machine maintenance | 590 | 10 | -333 | -67 | 257 | 623 | 30 | 32 |
| 17.07 | Commercial art | 610 | 30 | -208 | 235 | 402 | 845 | 45 | 49 |
| 17.0701 | Interior design | 1,300 | 50 | -43 | -572 | 1,207 | 728 | NA | NA |
| 17.0703 | Product design | 610 | 30 | -208 | 235 | 402 | 845 | NA | NA |
| 17.08 | Commercial fishing occupations | 1,230 | 30 | -112 | 1,065 | 1,118 | 2,295 | NA | NA |
| 17.0501 | Photographic laboratory & darkroom occupations | 580 | 30 | -77 | -8 | 503 | 572 | 81 | 88 |
| 17.10 | Construction & maintenance trades | 6,860 | 350 | 765 | -362 | 7,625 | 6,498 | NA | NA |
| 17.1001 | Carpentry | 8,280 | 210 | -1,024 | 2,231 | 7,256 | 10,511 | 158 | 171 |
| 17.1002 | Electricity | 3,130 | 60 | 541 | 1,133 | 3,671 | 4,263 | 78 | 84 |
| 17.100301 | Maintenance, heavy equipment | 3,710 | 80 | 901 | 2,541 | 2,809 | 6,251 | 55 | 59 |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 17.100302 | Operation, heavy equipment | 2,850 | 50 | 12 | -397 | 2,862 | 2,453 | NA | NA |
| 17.1004 | Masonry | 2,110 | 40 | -104 | -487 | 2,006 | 1,623 | 65 | 70 |
| 17.1005 | Painting & decorating | 4,360 | 130 | -1,124 | -228 | 3,236 | 4,132 | 5 | 5 |
| 17.1006 | Plastering | 1,600 | 30 | -225 | -714 | 1,375 | 886 | 8 | 9 |
| 17.1007 | Plumbing & pipe fitting | 2,330 | 50 | 263 | 5 | 2,593 | 2,335 | 48 | 52 |
| 17.1008 | Dry wall installation | 860 | 10 | -315 | -117 | 545 | 743 | NA | NA |
| 17.1009 | Glazing | 310 | 10 | -73 | -83 | 237 | 227 | 1 | 1 |
| 17.1010 | Roofing | 970 | 10 | -461 | 111 | 509 | 1,081 | NA | NA |
| 17.1099 | Construction & maintenance trades, other | 8,660 | 130 | -3,306 | -325 | 5,354 | 8,-35 | 40 | 43 |
| 17.11 | Custodial services | 16,050 | 820 | 55 | 5,541 | 16,105 | 21,591 | NA | NA |
| 17.12 | Diesel mechanic | 160 | 0 | 6 | 103 | 166 | 263 | 43 | 47 |
| 17.13 | Drafting | 1,600 | 30 | 205 | 314 | 1,805 | 1,914 | 77 | 83 |
| 17.14 | Electrical occupations | 3,130 | 60 | 541 | 1,133 | 3,671 | 4,263 | NA | NA |
| 17.1401 | Industrial electrician | 3,200 | 30 | -2,747 | -2,898 | 453 | 302 | 102 | 110 |
| 17.1402 | Lineman | 3,920 | 40 | -550 | -2,449 | 3,370 | 1,471 | NA | NA |
| 17.1403 | Motor repairmen | 170 | 10 | 51 | -141 | 221 | 29 | NA | NA |
| 17.1501 | Communications | 2,800 | 30 | -1,101 | 982 | 1,699 | 3,782 | 35 | 38 |
| 17.1503 | Radio/television | 900 | 20 | 226 | 15 | 1,126 | 915 | 93 | 101 |
| 17.16 | Fabric maintenance services | 4,250 | 260 | -680 | -580 | 3,570 | 3,670 | NA | NA |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 17.1601 | Dry cleaning | 1,030 | 50 | -30 | -622 | 1,000 | 408 | NA | NA |
| 17.1602 | Laundering | 660 | 30 | 1,052 | 62 | 1,712 | 722 | NA | NA |
| 17.1901 | Composition, make up, & typesetting | 850 | 30 | 589 | 6 | 1,439 | 856 | 67 | 72 |
| 17.1902 | Printing press occupations | 680 | 10 | -31 | 377 | 649 | 1,057 | NA | NA |
| 17.1903 | Lithography, photography, plate making | 230 | 10 | 6 | -48 | 236 | 182 | NA | NA |
| 17.1904 | Photo engraving | 230 | 10 | 6 | -48 | 236 | 182 | NA | NA |
| 17.2002 | Radiographer | 440 | 30 | 164 | -25 | 604 | 415 | NA | NA |
| 17.2101 | Instruments, other than clocks or watches | 1,610 | 50 | -440 | 937 | 1,170 | 2,547 | NA | NA |
| 17.2102 | Watchmaking and repair | 200 | 10 | -22 | 184 | 178 | 384 | 10 | 11 |
| 17.2301 | Foundry | 180 | 0 | -12 | 81 | 168 | 261 | NA | NA |
| 17.2302 | Machine shop | 1,250 | 30 | 718 | -543 | 1,968 | 707 | 110 | 119 |
| 17.2303 | Machine tool operation | 2,010 | 60 | -219 | -258 | 1,791 | 1,752 | NA | NA |
| 17.2304 | Metal trades, combined | 1,120 | 20 | -226 | -248 | 894 | 872 | NA | NA |
| 17.2305 | Sheet metal | 1,080 | 20 | -363 | -277 | 1,443 | 1,357 | 28 | 30 |
| 17.230602 | Electric welding | 2,630 | 50 | 646 | 1,013 | 3,276 | 3,643 | 314 | 340 |
| 17.230603 | Combination welding | 2,630 | 50 | 646 | 1,013 | 3,276 | 3,643 | 314 | 340 |
| 17.2307 | Tool & die making | 360 | 10 | 231 | 56 | 591 | 416 | NA | NA |
| 17.2399 | Metalworking, other | 1,030 | 30 | 314 | -257 | 1,344 | 773 | NA | NA |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 17.2601 | Barbering | 570 | 20 | 470 | 71 | 1,040 | 641 | NA | NA |
| 17.2602 | Cosmetology | 3,890 | 280 | -1,031 | 502 | 2,859 | 4,392 | 256 | 277 |
| 17.2801 | Fireman training | 1,330 | 10 | -78 | 5,608 | 1,252 | 6,938 | NA | NA |
| 17.2802 | Law enforcement training | 2,950 | 60 | 11 | 8,371 | 2,961 | 11,321 | 68 | 108 |
| 17.2899 | Public service occupations, other | 230 | 10 | 349 | 739 | 579 | 969 | 34 | 54 |
| 17.2901 | Baker | 1,060 | 40 | -52 | -319 | 1,008 | 741 | NA | NA |
| 17.2902 | Cook/chef | 8,100 | 410 | -1,208 | 752 | 6,892 | 8,852 | NA | NA |
| 17.2903 | Meat cutter | 1,420 | 30 | 41 | 410 | 1,461 | 1,830 | 27 | 29 |
| 17.2904 | Waiter/waitress | 10,120 | 610 | -2,418 | -201 | 7.702 | 9,919 | NA | NA |
| 17.31 | Small engine repair | 1,240 | 40 | -323 | 1,163 | 917 | 2,403 | 40 | 43 |
| 17.32 | Stationary energy sources occupations | 1,150 | 30 | 11 | 89 | 1,161 | 1,239 | 4 | 4 |
| 17.3301 | Dressmaking | 1,000 | 80 | -258 | -682 | 742 | 318 | NA | NA |
| 17.3302 | Tailoring | 1,160 | 90 | -219 | -654 | 941 | 506 | NA | NA |
| 17.3399 | Textile production & fabrication, other | 8,630 | 300 | -1,890 | 976 | 6,740 | 9,606 | NA | NA |
| 17.34 | Leather working | 400 | 10 | -104 | 466 | 296 | 866 | NA | NA |
| 17.3401 | Shoe manufacturing | 60 | 0 | -18 | 28 | 42 | 88 | NA | NA |
| 17.3402 | Shoe repair | 60 | 0 | -18 | 10 | 42 | 70 | NA | NA |
| 17.35 | Upholstering | 400 | 10 | -46 | 537 | 354 | 937 | 35 | 38 |

Table 4.3.—Occupational Employment Projections Related to Vocational Education Program Codes (continued)

| OE Code | Program | 1976[1] Employment | 1980 Projected Labor Demand: Replacement[2] Needs | Expansion[3] Needs 1 | Expansion[4] Needs 2 | Total[5] Employment 1 | Total[6] Employment 2 | Vocational Education Output 1976[7] | Vocational Education Output 1980[8] |
|---|---|---|---|---|---|---|---|---|---|
| 17.3699 | Woodworking, other | 1,120 | 50 | -223 | -899 | 897 | 221 | 13 | 14 |
| 17.2200 | Martime occupations | | | | | 55 | 65 | 131 | 142 |

[1]Florida Department of Commerce, Florida Employment Directions: Industries and Occupations 1970-1980, Planning Region 8, Tallahassee, Florida, 1976.

[2]Ibid.

3 and [4]These were calculated as the difference between 1980 projected employment levels and the 1976 employment levels.

[5]Shift-share projections from text Table 4.2.

[6]Econometric projections from text Table 4.2.

[7]Unpublished data, Florida Department of Education.

[8]Our estimates by extrapolation.

Outline

Chapter 5

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## 5.1. Introduction

This chapter consists of four main sections. Following the introduction we review the main findings of Phase One in regard to delivery system assessment, particularly at the national and state levels. Section 5.3. presents an overview of the VTE system in the four-county Tampa Bay area. We focus on presenting and analyzing enrollment data by program area, grade level, and characteristics of students such as sex and race.

Section 5.4. provides the results of our field work in the area. This includes a discussion of the survey methodology employed; the administration and organization of VTE in the Tampa-St. Petersburg region; program funding, structure, and needs; student needs, including placement and "dumping"; and faculty needs. This is a crucial section of our overall methodology, because we feel too many needs assessments rely exclusively on analyses of raw data or the conclusions of other researchers, while remaining detached from the actual workings of the delivery systems. We believe that the evaluation of the needs and functioning of vocational education cannot be based solely on quantitative criteria such as placement rates and program offerings. A thorough needs assessment must also take into account observations and contributions of those persons actually involved in the educational process: students, faculty and administrators. Our visits to the educational sites and facilities provide the basis for this section.

The final section deals with business needs, and focuses on a report of the workshop on industry needs held on June 7, 1977 in Jacksonville, with the participation of VTE officials, labor market analysts, and personnel directors from the area's largest employers.

## 5.2. Review of earlier findings

In this section we will review the main conclusions of Chapter 6 in Phase One of our report, which dealt with an assessment of the delivery systems at the

national, state and local levels. This will serve as a background for comparison with the assessment of the VTE delivery systems in the Tampa-St. Petersburg region.

Nationwide studies of VTE (Lecht, 1974; Drewes and Katz, 1975) have raised a number of issues with respect to: (a) the human capital and labor market efficiency of VTE programs, and, (b) the formal administrative structure of VTE. In regard to the first set of issues, studies at the national level point out that program inertia and inflexibility hinder the response of VTE to changing labor markets. Many traditional programs, such as agriculture and home economics, are only peripherally related to the job market. In many states funding is geared to the number of students in a program, and as a result popular programs are the paying programs. The result is a reluctance to phase out unnecessary or outdated programs and institute new programs in response to changing employment trends for fear that they may not be saleable to students. A related effect of the traditional offerings is a perpetuation of male/female concentration in their traditional occupations.

The primary goal of VTE programs is to increase the employability and wage earning potential of students. The results at the national as well as at the state levels have been mixed. The number of graduates actually getting jobs in their specific, or even related, fields of training is low. Measured increases in earnings and employment are reduced because of the emphasis on programs related to construction and manufacturing, highly cyclical sectors in the economy. This makes the benefits vary widely over the course of the business cycle.

A second goal of VTE is to meet business needs for skilled labor. National studies claim that VTE programs have not proven effective in meeting this need. One reason is that either VTE training is too narrow for firms desiring broadly educated graduates to enter their own specific on-the-job training, or too broad for firms hiring skilled labor at the entry level. A related reason is the lack of

communication between industry and VTE program directors and instructors.

The second set of issues covered in previous study deals with administration of VTE. One conclusion is that state plans for the administration of VTE are often merely pro forma documents constituting a contract between the state and the federal government for provision of VTE programs, and not truly planning documents. This is also largely the case in Florida. Moreover, these plans often lack a system for monitoring and evaluating programs at the local level.

Second, the relationship between state planners and local administrators is not always smooth. State manpower data is often disregarded by local administrators who consider it unreliable, who tend to rely on area skill surveys and their knowledge of local business conditions, or who are inclined to respond to student needs rather than to labor market trends because of funding formulas.

Conflicts also exist between VTE administrators in rural areas and state planners in Florida and the U.S. This was also apparent in Region Four where the Phase One study was conducted. VTE programs in rural areas (relative to those in urban areas) are characterized by higher per student costs and more limited program offerings, dominated by agribusiness for males and homemaking for females. Substantial differences also exist in the quality of facilities, instructors, and programs themselves between urban and rural areas.

Finally, a number of state and local evaluations of the needs of VTE were als reviewed in Phase One of our report. These were found to exhibit a number of common flaws. First, few needs assessments cover the total labor market area. Second, background material describing labor market trends is generally omitted from most analyses, with few exceptions. Third, most existing needs assessments are confusing and inaccurate in their use of such labor market concepts as employment, demand, shortages, job openings, and job vacancies. Fourth, few studies attempted any

supply side analysis. Finally, most studies employed an inadequate methodology for projecting demand for labor by occupation.

## 5.3. Overview of VTE in the Tampa Bay Area

In this section we discuss some general characteristics of VTE programs and students in the four counties of the Tampa Bay area. Table 5.3.1. lists total FTE student count and the percentages by major program categories, for the area and its component counties during the school year 1975-76. Student count is presented by unweighted FTE and by FTE weighted by a program cost category. Vocational education comprised 10.6 percent of total unweighted FTE and 17.5 percent of total weighted FTE in the region as a whole. Pasco and Pinellas counties have the highest percentage of students in VTE, followed by Manatee and Hillsborough. This survey is not complete because it does not cover VTE enrollment and programs in the community colleges. A complete needs assessment of the VTE system would require full coverage.

### 5.3.1. Enrollment by Program

The three major classifications of VTE programs, as identified by Trapnell (1976), are pre-job preparatory, job preparatory and supplemental offerings. Pre-job preparatory offerings provide experiences preliminary to training for immediate employment. This category comprises prevocational education, work experience and pretechnical education. Prevocational education provides exploration of career opportunities. Its scope is determined by school size and availability of job preparatory programs at the secondary and post-secondary levels. The comprehensive prevocational program is based on the "six-spoke wheel" with offerings in Agribusiness, Business, Distributive, Home Economics, Industrial, Health and Public Service. Limited prevocational programs offer at least four of the program categories, while the minimum programs offer at least two.

Work experience programs are designed to improve students' social attitudes and develop basic employability skills. A decision whether to initiate work experience should follow a needs assessment by the school to determine the number of potential

Table 5.3.1.—FTE Student Count, 1975-76

| | Hillsborough | Manatee | Pasco | Pinellas | Total |
|---|---|---|---|---|---|
| Total Unweighted FTE | 118,741 | 20,907 | 22,492 | 96,529 | 258,669 |
| % Exceptional Ed. | 2.8% | 2.5% | 2.2% | 2.6% | 2.6% |
| % Vocational Ed. | 8.9% | 10.0% | 12.2% | 12.4% | 10.6% |
| % Adult Ed. | 2.4% | 1.7% | 3.4% | 2.0% | 2.3% |
| % Basic Ed. | 85.9% | 85.8% | 82.1% | 83.0% | 84.5% |
| Total Unweighted FTE | 147,762 | 26,479 | 28,297 | 126,017 | 328,555 |
| % Exceptional Ed. | 8.1% | 8.1% | 7.2% | 8.2% | 8.0% |
| % Vocational Ed. | 14.4% | 16.3% | 18.6% | 21.1% | 17.5% |
| % Adult Ed. | 2.4% | 1.4% | 3.1% | 1.7% | 2.1% |
| % Basic Ed. | 75.0% | 74.2% | 71.0% | 69.0% | 72.3% |

Source: Profiles of Florida School Districts, 1975-76.

early school leavers. Pretechnical education is provided at the secondary level for students planning to enroll in advanced technical education programs at the post-secondary level.

Job preparatory offerings are designed to provide instruction at the secondary or post-secondary level in specific occupations or occupational clusters. The major role in identifying the needs for these offerings and determining their scope is assumed by the Coordinating Councils. Finally, supplemental offerings provide upgrading and uptraining for persons who have already entered the labor market.

Table 5.3.2. lists total enrollment in VTE and the percentage in each program area for the region and its counties. The total exceeds total FTE student count because the former is a head count of students in all vocational classes and is not reduced to the number of full-time equivalent students. Moreover, enrollment in vocational and adult programs is combined.

A comparison of the percentage of enrollees in different programs among the different counties provides insight into what areas of VTE are most stressed in each school district. First, we observe the wide difference in percentage of enrollees in agribusiness, ranging from 15.1 percent in Pasco and 11.0 percent in Manatee to 7.3 percent in Hillsborough and Pinellas counties. However, viewed from the perspective of the total labor market, agricultural employment is a small component of total employment in the region. Viewing VTE program planning from a labor market perspective, it may be that there is an over emphasis on agribusiness programs in Manatee and Pasco Counties given the declining job opportunities in the agriculture sector of the area's economy.

The wide difference in the percentage of enrollees by county could be explained by the observation made in Phase One of our report that rural counties seem less

Table 5.3.2.—Enrollment in Vocational Programs, 1976

| | Hillsborough | Manatee | Pasco | Pinellas | Total |
|---|---|---|---|---|---|
| Total enrolled | 57,361 | 10,619 | 12,835 | 75,974 | 156,789 |
| Percent in: | | | | | |
| Agribusiness | 7.3% | 11.0% | 15.1% | 2.6% | 5.9% |
| Business | 20.2% | 10.7% | 25.4% | 20.8% | 20.3% |
| Consumer and Homemaking | 11.9% | 16.0% | 6.2% | 17.3% | 14.3% |
| Diversified Cooperative Training | 1.4% | 0.8% | 1.4% | 1.3% | 1.3% |
| Distributive | 4.9% | 1.7% | 2.5% | 6.8% | 5.4% |
| Home Economics Gainful | 15.2% | 23.3% | 17.5% | 10.7% | 13.7% |
| Health Occupations | 3.2% | 3.9% | 6.0% | 4.3% | 4.0% |
| Industrial Arts | 15.2% | 14.7% | 17.0% | 11.1% | 13.3% |
| Industrial Occupations | 13.6% | 8.7% | 7.0% | 15.8% | 13.8% |
| Public Service | 0.4% | 4.7% | 0.1% | 2.4% | 1.6% |
| Special Courses | 1.4% | 1.5% | - | 2.4% | 1.8% |
| Work Experience | 5.1% | 2.8% | 1.2% | 4.5% | 4.3% |

Source: Unpublished data on program operations supplied by the Divison of Vocational Education.

flexible in adjusting to labor market changes and tend to concentrate enrollment in agribusiness and home economics. This is supported by the data disaggregated by individual programs which shows enrollment concentrated in traditional programs such as farm mechanics and other agriculture.

Business programs absorb a large portion of enrollment in every county but Manatee. However, much of this enrollment is concentrated in two programs: stenograph/secretary and typing/related occupations. Diversified cooperative training (DCT) is a co-op program designed to place students in employment primarily in offices and banking. Combining enrollment in business and DCT we observe that 21.6 percent of total enrollment in regional vocational programs is found in business and office occupations.

Home economics continues to play a prominent role in VTE in the region. Consumer and homemaking education includes mostly nonoccupational programs, while home economics gainful ranges from pre-vocational instruction through job preparation in the occupational areas of child care, home management, furnishings, and food and clothing production. Both program areas combined account for 28.0 percent of vocational enrollment in the region, and range from a low of 23.7 percent in Pasco to a high of 39.3 percent in Manatee.

A final cluster of programs which deserves mention are pre-job preparatory industrial arts and job preparatory industrial occupations. Much like home economics, this traditional program area continues to absorb a large portion of vocational enrollment: 27.1 percent of enrollment for the region, ranging from 23.4 percent in Manatee to 28.8 percent in Hillsborough. Home economics and industrial trades combined account for over half of total vocational enrollment in every county but Pasco (which comes close with 47.7 percent). In the face of widely changing labor market needs, the concentration of VTE enrollment in the traditional programs continues to exist.

5.3.2. Enrollment by Grade Level

In Table 5.3.3. the individual courses in each program area were clustered by grade level and the percentage of total enrollment in each area was computed for junior high school (7-9), secondary (10-12) and post-secondary (+12). This grouping enables us to differentiate between programs which are primarily pre-job preparatory or pre-vocational (enrollment concentrated in grades 7-9) from those which are job preparatory in scope (enrollment in grades 10 and above). In the first category we find agribusiness, home economics gainful, industrial arts, and work experience which is mainly designed to provide employment for potential dropouts in grades 8-10. For example, in agribusiness the percentage of total enrollment in grades 7-9 was 80.0 percent in Hillsborough, 64.9 percent in Manatee, 66.1 percent in Pasco and 57.2 percent in Pinellas. For industrial arts programs in Hillsborough County, 73.9 percent of enrollment was in courses at the junior high school level. In the same program area, Manatee had 75.4 percent of enrollment in the 7-9 grade level, Pasco had 96.5 percent and Pinellas had 71.5 percent.

Consumer and homemaking, diversified cooperative training, health occupations and public service (law enforcement, fire science technology, etc.) had a majority of their enrollment in grades 10-12 and/or grades 13 and over. Public service education, for example, had no enrollment below the post-secondary level in any county but Hillsborough. Consumer and homemaking education showed enrollment of 99.0 percent at the secondary and post-secondary levels in Hillsborough, 100 percent in Manatee, 99.8 percent in Pasco, and 89.1 percent of enrollment above the ninth grade in Pinellas.

Pre-job preparatory programs are explicitly designed to provide for student exploration of career opportunities at the junior high school level (Trapnell, 1976). However, of the total enrollment in grades 7-9, the proportion made up by agribusiness, home economics and industrial arts, combined, was 78.6 percent for

Table 5.3.3.—Percentage of Enrollees in Vocational Programs by Grade Level by County, 1975-76

| | Hillsborough | | | Manatee | | | Pasco | | | Pinellas | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7-9 | 10-12 | +12 | 7-9 | 10-12 | +12 | 7-9 | 10-12 | +12 | 7-9 | 10-12 | +12 |
| Agribusiness | 80.0 | 18.8 | 1.2 | 64.9 | 29.8 | 5.3 | 66.1 | 33.9 | - | 57.2 | 10.6 | 32.2 |
| Business | 35.0 | 47.2 | 17.7 | 40.9 | 24.0 | 35.1 | 50.3 | 49.7 | - | 25.5 | 44.9 | 29.6 |
| Consumer and Homemaking | 1.0 | 45.4 | 53.6 | - | 58.3 | 41.6 | 0.2 | 81.5 | 18.3 | 10.9 | 26.0 | 63.1 |
| Diversified Cooperative Training | 2.0 | 98.0 | - | - | 100.0 | - | - | 100.0 | - | - | 80.5 | 19.5 |
| Distributive | 33.5 | 26.3 | 40.2 | - | 72.4 | 23.6 | 67.9 | 32.1 | - | 42.7 | 29.5 | 27.8 |
| Home Economics Gainful | 87.4 | 5.7 | 7.0 | 64.5 | 16.3 | 19.2 | 92.8 | 5.3 | 1.8 | 47.0 | 18.8 | 34.2 |
| Health Occupations | 34.8 | 15.1 | 50.1 | - | - | 100.0 | 51.7 | 14.0 | 34.2 | 19.0 | 7.0 | 74.0 |
| Industrial Arts | 73.9 | 26.1 | - | 75.4 | 24.6 | - | 96.5 | 3.5 | - | 71.5 | 28.5 | - |
| Industrial Occupations | 3.6 | 39.5 | 56.9 | 15.3 | 17.8 | 66.9 | 13.3 | 76.8 | 9.9 | 4.8 | 13.9 | 81.3 |
| Public Service | - | 55.3 | 44.7 | - | - | 100.0 | - | - | 100.0 | - | - | 100.0 |
| Special Courses | 76.2 | 9.3 | 14.5 | 32.7 | 12.3 | 54.9 | - | - | - | 25.6 | 3.1 | 71.2 |
| Work Experience[1] | 97.6 | 2.4 | - | 100.0 | - | - | 23.5 | 76.5 | - | 99.4 | 0.6 | - |
| TOTAL | 47.0 | 30.2 | 22.8 | 42.4 | 26.4 | 31.2 | 61.5 | 34.2 | 4.3 | 31.2 | 24.9 | 43.8 |

[1]Enrollment in work experience is grouped in grade level categories of 7-10 and 11-12. No students were enrolled at levels above 12th grade.

Manatee, 69.3 percent for Pasco, 64.7 for Hillsborough and 46.3 for Pinellas. Clearly, the tendency is to concentrate enrollment of students in the 7-9 grade level in the traditional program areas which are, at best, only peripherally related to the labor market. This does not speak well for the function of pre-job preparatory programs of exposing younger students to careers in a changing job market. On the contrary, it suggests that junior high school students are given little preparation for choosing vocational-technical programs at the secondary level leading to promising careers and employment. For example, in health occupations there is no enrollment at either the junior or senior high school levels in Manatee County and only 19.0 percent of enrollment at grades 7-9 in Pinellas County, presumably in pre-vocational, or job exploratory, programs. The percentage of enrollment at the junior high level is higher in Hillsborough and Pasco counties, with 34.8 percent and 51.7 percent, respectively.

Moreover, these early experiences with vocational programs do much to shape student interest for various programs at the secondary and post-secondary levels. With student interest being an important criterion for deciding upon the range of program offerings at job preparatory levels, the result is often one of perpetuating a VTE system based on traditional programs increasingly unrelated to labor market needs and opportunities.

5.3.3. Distribution by Sex

Data on enrollment for females, blacks, disadvantaged and handicapped students by program by county is given in Table 5.3.4.

Females constitute over half of total enrollment in vocational programs in every county surveyed, but female enrollment varies significantly among the different program areas. Enrollment of females is particularly concentrated in the traditional areas of consumer and homemaking and home economics gainful. Females make up an average of 86.7 percent and 78.8 percent of enrollment in these program areas,

Table 5.3.4.—Enrollment in Vocational Programs of Females, Blacks, Disadvantaged and Handicapped Students, by County and by Program Area, 1975-76

| Program area | Hillsborough | | | | | Manatee | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Enrollment | % Female | % Black | % Disadvantaged | % Handicapped | Enrollment | % Female | % Black | % Disadvantaged | % Handicapped |
| Agribusiness | 4,208 | 19.5 | 12.4 | 3.2 | 1.9 | 1,172 | 26.1 | 21.0 | 7.2 | 1.0 |
| Business | 11,591 | 75.2 | 17.7 | 5.1 | 0.7 | 1,138 | 76.4 | 15.3 | 3.0 | 0.3 |
| Consumer and Homemaking | 6,828 | 83.9 | 26.0 | 6.9 | 0.5 | 1,703 | 79.0 | 18.8 | 0.1 | 0 |
| Diversified Cooperative Training | 796 | 36.4 | 19.5 | 20.5 | 0.7 | 84 | 40.5 | 3.6 | 0 | 0 |
| Distributive | 2,822 | 53.3 | 14.9 | 3.2 | 0.4 | 181 | 53.6 | 5.5 | 8.3 | 0 |
| Home Economics Gainful | 8,732 | 80.7 | 25.2 | 5.3 | 2.2 | 2,480 | 73.5 | 26.1 | 4.5 | 9.3 |
| Health Occupations | 1,839 | 79.0 | 15.8 | 2.7 | 0.4 | 418 | 73.4 | 6.7 | 5.0 | 0 |
| Industrial Arts | 8,720 | 17.2 | 18.1 | 3.3 | 0.9 | 1,566 | 16.8 | 11.8 | 2.5 | 0.1 |
| Industrial Occupations | 7,814 | 12.3 | 12.1 | 5.6 | 0.7 | 922 | 18.6 | 13.6 | 8.1 | 0.3 |
| Public Service | 255 | 27.4 | 9.0 | 2.3 | 0 | 495 | 7.7 | 1.0 | 0 | 0 |
| Special Courses | 802 | 39.5 | 26.4 | 21.8 | 78.2 | 162 | 36.4 | 45.7 | 89.5 | 10.5 |
| Work Experience | 2,954 | 29.6 | 14.5 | 95.8 | 0.2 | 298 | 39.3 | 25.8 | 14.4 | 0 |
| TOTAL | 57,361 | 51.0 | 18.5 | 9.9 | 2.1 | 10,619 | 51.1 | 17.8 | 5.4 | 0.6 |

Table 5.3.4.—Enrollment in Vocational Programs of Females, Blacks, Disadvantaged and Handicapped Students, by County and by Program Area, 1975-76 (Continued)

| Program Area | Pasco | | | | | Pinellas | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Enrollment | % Female | % Black | % Disadvantaged | % Handicapped | Enrollment | % Female | % Black | % Disadvantaged | % Handicapped |
| Agribusiness | 1,937 | 27.4 | 4.1 | 9.9 | 1.2 | 1,990 | 34.1 | 10.5 | 17.3 | 3.2 |
| Business | 3,262 | 61.4 | 4.2 | 6.8 | 1.2 | 15,803 | 72.1 | 11.6 | 7.5 | 1.2 |
| Consumer and Homemaking | 793 | 94.2 | 10.5 | 4.3 | 1.6 | 13,137 | 88.8 | 16.2 | 5.5 | 3.4 |
| Diversified Cooperative Training | 175 | 46.9 | 3.4 | 1.1 | 0 | 977 | 40.3 | 16.8 | 99.7 | 0 |
| Distributive | 318 | 54.7 | 2.2 | 0.3 | 0.3 | 5,166 | 57.3 | 13.7 | 71.4 | 0.7 |
| Home Economics Gainful | 2,248 | 75.4 | 4.9 | 5.6 | 0.7 | 8,107 | 79.1 | 17.4 | 20.2 | 2.8 |
| Health Occupations | 769 | 75.2 | 4.8 | 0.6 | 0.9 | 3,285 | 83.2 | 16.2 | 10.5 | 0.3 |
| Industrial Arts | 2,188 | 25.9 | 2.9 | 6.6 | 1.1 | 8,442 | 13.7 | 12.9 | 15.0 | 2.0 |
| Industrial Occupations | 900 | 18.7 | 3.3 | 22.1 | 0.3 | 12,009 | 14.6 | 7.9 | 7.1 | 1.0 |
| Public Service | 16 | 0 | 0 | 0 | 0 | 1,799 | 4.6 | 1.9 | 0.5 | 0.6 |
| Special Courses | - | - | - | - | - | 1,845 | 39.7 | 36.0 | 68.7 | 31.1 |
| Work Experience | 153 | 27.4 | 5.2 | 3.3 | 0 | 3,412 | 54.2 | 13.8 | 20.6 | 2.4 |
| TOTAL | 12,835 | 51.6 | 4.4 | 7.3 | 1.0 | 75,974 | 54.2 | 13.8 | 20.6 | 2.4 |

respectively, for the region as a whole. The two areas combined account for 43.6 percent of total female enrollment in vocational programs in Hillsborough, 58.3 percent in Manatee, 36.9 percent in Pasco and 43.9 percent in Pinellas. Females also constitute a more than proportionate share of enrollment in business and health occupations. This is due, in large measure, to significant female enrollment in typing/related occupations, stenograph/secretary and other clerical courses for the former, and in nursing-related courses for the latter.

Conversely, male enrollment is concentrated in agribusiness, industrial occupations and public service. The concentration of males in industrial occupations is even more significant considering that females constitute a more than proportionate share of enrollment in cosmetology, and important component of this program area. Agribusiness and the industrial trades alone account for 62.0 percent of total male enrollment in all vocational programs in Hillsborough, 56.2 percent in Manatee, 60.5 percent in Pasco and 54.1 percent in Pinellas.

It is evident that there is still much to be accomplished in the area of breaking the sexual barriers traditionally imposed in particular occupations. VTE programs continue to train an overwhelming majority of the females in occupations directly or indirectly related to homemaking and domestic work, which are often low-wage occupations, as well. Moreover, we noted above that the majority of students in pre-job preparatory programs are to be found in agribusiness, industrial arts and home economics gainful. Considering the concentration of male students in the first two program areas and of females in the third the evidence suggests that the exploratory programs are not fully successful in exposing students to occupations not traditionally associated with their sex.

5.3.4. Distribution by Race

The table below compares black enrollment in vocational educational education

as a percentage of total vocational enrollment to the proportion that black students make up of the total FTE student count in each county. Black students as a percentage of total students and black enrollment as a percentage of total vocational enrollment by county, 1975-76.

| County | FTE black students as % of total FTE student count | Black enrollment as % of total enrollment in vocational programs |
|---|---|---|
| Hillsborough | 18.6 | 18.5 |
| Manatee | 20.7 | 17.8 |
| Pasco | 4.6 | 4.4 |
| Pinellas | 16.0 | 13.8 |

Source: Profiles of Florida School Districts, 1975-76, and unpublished data supplied by the Department of Education

It can be seen that enrollment of black students in vocational programs is generally proportional to their participation in the school system as a whole.

The racial/ethnic distribution of enrollment by program is listed in Table 5.3.4. for blacks in each county. The percentage of hispanics is not listed, being insignificant in every county except Hillsborough, where they constitute 3.1 percent of total vocational enrollment. Blacks tend to be significantly concentrated in consumer and homemaking, home economics gainful, special courses and work experience. The large number of black students enrolled in both home economics programs suggests their training continues to be in occupations related to domestic service, thereby perpetuating the tendency of blacks and other minorities to be employed in this large-low wage sector.

Special courses include training for the mentally retarded and socially maladjusted and other special programs. The relation between mental retardation and social maladjustment, and socio-economic disadvantage is well known. Concentration of black enrollees in special programs can be attributed to the disproportionate number of black citizens suffering from unemployment, inadequate housing and other social ills. This may also explain the large number of blacks in work experience,

a program designed to provide part-time employment to potential early-leavers (dropouts).

5.3.5. Participation of Disadvantaged Students

Similarly to blacks, disadvantaged students have a significant concentration in work experience and special courses. These programs could be serving a positive role in breaking the cycle of low motivation, underachievement, underemployment and poverty by providing special aid to disadvantaged students in addition to their regular courses. On the other hand, the programs could also be a "dumping ground" for disruptive students and may serve to isolate and alienate them further from the educational system. It is not our task to evaluate these programs, nor would we be able to do so based on limited data and brief, general visits. A comprehensive needs assessment, however, should include an evaluation of programs designed for disadvantaged students to see if their needs are actually being met.

Disadvantaged students are also concentrated in agribusiness and industrial occupations in Manatee and Pasco, and in diversified cooperative training and distributive in Hillsborough and Pinellas. This enrollment of disadvantaged students in cooperative programs, as in Hillsborough--and particularly in Pinellas--appears to be a very positive step in attempting to break the cycle of disadvantage and unemployment or underemployment. Providing employment through co-op programs provides the student an opportunity to gain experience as well as work skills, both aids to future permanent employment.

According to the FSAC Annual Evaluation Report (1976), the State Plan for the Administration of Vocation Education currently establishes enrollment goals for disadvantaged students. These call for disadvantaged students to constitute 9.29 percent of total enrollment in vocational programs. We can see from Table 5.3.4. that Hillsborough and Pinellas counties both exceed these goals, with 9.9 percent and 20.6 percent, respectively, constituting students in this target group.

Manatee and Pasco counties, however, fall short of the goal with 5.4 percent and 7.3 percent, respectively. For this report we did not examine the validity of the state-wide goal for disadvantaged students and its particular applicability to individual counties.

5.3.6. Handicapped Students and Programs

The State Plan for the Administration of Vocational Education (1975-76) defines the in-school population of handicapped persons in Florida as consisting of educable mentally retarded (EMR), trainable metally retarded (TMR), hard of hearing, deaf, speech impaired, visually handicapped, crippled or those who have other health requirements which require special educational services. The development and implementation of vocational education programs for handicapped persons began in earnest in Florida in 1969 with the allocation of special vocational education funds for the handicapped.

In 1975-76, approximately half of the 27,952 handicapped secondary population in the state were receiving vocational education. The Division of Vocational Rehabilitation indicated that of the estimated 21,400 handicapped adults in Florida in 1975, only 13.5 percent were currently enrolled in vocational education programs. The State Plan notes: "The evidence is that the level of unmet needs of adults in particular are far in excess of the level of vocational services being provided" (p. 143).

In the Tampa Bay area there was a relatively small number of handicapped students in vocational programs in 1975-76: 1,185 in Hillsborough, 61 in Manatee, 126 in Pasco and 1,861 in Pinellas, or 2 percent of total enrollment for the region. As would be expected, their enrollment is concentrated in special courses, although many are also integrated into the regular programs. Since we have no data on the total handicapped population in each county, it is impossible for us to determine the level of unmet needs. However, the State Plan's handicapped enrollment goals

call for handicapped students to constitute 3.85 percent of the total students enrolled in vocational programs (FSAC Annual Evaluation Report, 1976). As is clear from Table 5.3.4., none of the counties surveyed met this goal.

## 5.4. Report on the Field Work

### 5.4.1. Survey Methodology

The field work in the labor market area is perhaps the most important element in our methodology for a comprehensive needs assessment of the VTE system. A general description of how the field work was conducted is given in Chapter 2. In this section we will discuss in greater detail the methodology used in our field work.

A total of twenty visits were made to Hillsborough (5), Pinellas (6), Pasco (5) and Manatee (4) counties. First, interviews were conducted with the directors of VTE in each of the four county school systems and with the deans or coordinators of VTE in each of the four community colleges. These persons were open and quite willing to discuss their concerns, and provided valuable information. A structured but flexible questionnaire was employed. After introducing ourselves and our project, permission was requested to visit sites and conduct field work. Their recommendations determined for the most part which facilities were actually toured. In all cases more facilities were suggested than what we were feasibly able to visit, given the constraints of staff, time and scope of our project. Next we asked them a number of questions pertaining to present labor market information, funding, facilities, student needs, the program planning process, the functioning of the Coordinating Council and the various committees, and their coordination with other agencies and business.

A total of six high schools and three area vocational-technical centers were visited, as well as five community college campuses. At each facility we interviewed students, program directors, faculty members and administrators, and at some we also

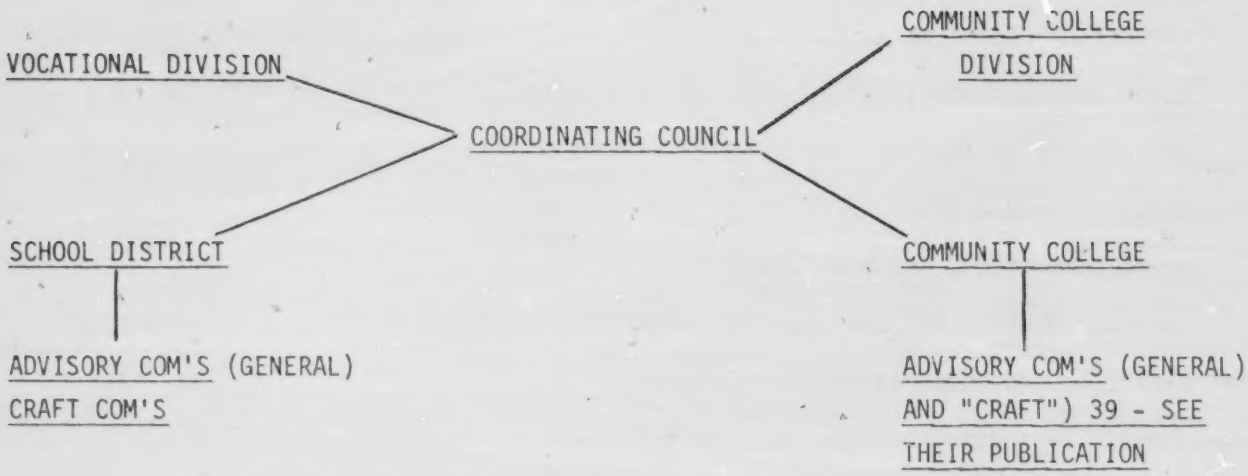
conducted interviews with occupational specialists and guidance counselors. We asked administrators and teachers about their previous training and experience; the quality of funding, facilities and students; special programs for handicapped, disadvantaged and bilingual students; placement; the functioning of advisory and craft committees; and their view of their most pressing needs. Students were questioned as to how and why they chose their programs, their knowledge of job prospects and information, the adequacy of counselling and job placement, and the quality of instructors and facilities.

Many subjects were quite candid and open in their comments, both in praise and in criticism. When a rapport was established between interviewer and subject many statements were made "off the record," which often turned out to be the most useful and informative. In keeping with this spirit of trust, neither individuals nor locations are identified.

5.4.2. Organization and Administration

The organizational structure of VTE delivery systems in the Tampa Bay Region exhibits a similar, not greater, amount of fragmentation compared to the Jacksonville region. In the area, four county school boards and four community colleges operate autonomously to provide VTE programs. Once again, the region lacks a single administrative unit with responsibility for monitoring the total VTE effort. This leaves open the possibility of competition over program offerings among counties and between the school system and the community college within a county.

As the chart below indicates the planning process appears very fragmented. For example, community college VTE programs are subject to divided authority. The Community College Division requires technical review of programs. Yet, the Vocational Division (established seven years ago) oversees the funding. As one VTE administrator described the situation, VTE programs in the community college are treated as "an orphan with two bosses."




Coordinating Councils

Within each community college district a coordinating council, with representatives of the school system and the community college, is charged with coordinating the VTE efforts of both delivery systems by promoting cooperation and preventing program duplication. Although the coordinating councils are in an ideal position for interfacing the VTE delivery systems with the local labor market, they do not appear to be performing this function. This could be achieved through the incorporation into the councils of representatives of business and labor as well as other local agencies involved in training and placement. The success of the councils in carrying out program coordination varies with each district. Moreover, coordination appears to be constrained by the multiplicity of coordinating councils serving a common labor market.

Hillsborough and Pinellas counties have district coordinating councils with little coordination between them while the two counties comprise essentially the same labor market. Pasco-Hernando Community College, with a campus only in Pasco County, participates in the coordinating council with representatives of VTE programs in the Pasco and Hernando county school systems. Employment data suggest that 35

percent of the labor force in Pasco County commutes outside of the county to work. The eastern portion of the county responds to the Lakeland and Polk County labor market while residents of the western portion tend to commute to Hillsborough and Pinellas. Hernando County, with an estimated population of less than 30,000 in 1975, essentially constitutes its own labor market. Yet, with this complexity of labor markets served, the coordinating council is empowered only to consider needs in the two counties it encompasses. The coordinating council in the Manatee Junior College district includes representatives of the Sarasota County school system even though Sarasota is not part of the community college district, while part of the Manatee County labor force is employed in adjacent Pinellas County, which has no representation in the council.

Some coordinating councils were found to be active, holding regular meetings. In these areas the community college and the school systems work together to establish articulation and determine which programs to offer at each as well as to review the program planning process. Lay representatives from the business community can help to identify labor market needs, aid in curriculum development and in establishing active advisory committees. In one district, a representative from CETA helps coordinate that agency's efforts with those of the other delivery systems while a representative from the University of South Florida opens the way for utilizing the ample resources of that institution in improving the VTE system. By contrast, in other districts the coordinating councils are not active, have fewer responsibilities, no lay representatives, and no active advisory committees. The ineffectiveness of councils in these districts appears to be the result of significant competition between the community college and the school system(s) over the delivery of VTE.

Competition Between Community College and School District

The existence of competition between community college and school system VTE programs in some districts manifests itself in the struggle for control over post-secondary programs. Some community colleges attempt to absorb adult vocational programs into their own VTE system. In other districts the community college has proven in the past to be reluctant to get involved in VTE, considering these programs to be below the college level. Thus, the school system has countered by establishing VTE area centers at the post-secondary level, competing with community college programs for funds, and this often leads to program duplication.

However, post-secondary programs at area centers need not be in competition with community college programs for they may very well serve two difference sets of students. Community college VTE programs are directed toward those students desiring a background in general education and a specific occupational training leading toward an A.S. or an A.A. degree. Post-secondary programs at area centers cater to students desiring specific training in programs of shorter duration and at lower costs to the student. Adequate coordination between the two types of programs to foster articulation and cooperation and to prevent duplication and inefficiency is the task of the coordinating council.

Competition Within Administrative Units

Another potential source of conflict is within the community college system and the public school system themselves. VTE administrators and teachers in some community college campuses allege that they receive a disproportionate share of the funds in comparison to other campuses, given their enrollment levels. Within the school system the competition is often between the high schools and the area vocational-technical centers. Centers that place increasing emphasis on post-

secondary programs are open to the criticism that they tend to exclude high school students interested in attending the centers part-time, in conjunction with their regular academic programs. Centers emphasizing secondary-level programs often function as vocational high schools, capitalizing on funds from the basic (K-12) program category as well as from the vocational division, which may serve as a source of friction with regular high schools. The advantage of centers emphasizing secondary training is that vocational students do not become "second-class citizens," as is sometimes the case in high schools that emphasize the academic programs, and the quality of their training is often higher.

The responsibility for maintaining program evenness across schools rests on different shoulders, depending on the administrative system employed by each particular school board. In some counties a district-wide program supervisor helps insure equality of programs across schools. The director of VTE may be at an assistant superintendent level in one district while in another he may act only as a consultant to the superintendent, without actually forming part of the chain of command.

Competition Among Delivery Systems

Finally, competition may exist between VTE and other delivery systems. In particular, all of the counties surveyed are prime sponsors of the Comprehensive Employment Training Act (CETA) Program, administered through federal funds. In some, a great degree of coordination and cooperation exists between VTE and CETA. The school systems and community colleges may receive millions of dollars in CETA contracts, employing teachers, counselors and staff in return for providing testing, work evaluation and training for CETA clients, and even office space for CETA administrators. Those administrative units that work together with CETA praise the program as a facilitator of permanent jobs for its clients. This is because many permanent positions require experience and the CETA program provides funds to public employers for the hiring of students without experience. However,

they also criticize CETA procedures claiming that administrators and teachers become discouraged with the amount of records that must be kept.

In those VTE administrative units where no coordination exists between local VTE programs and CETA, the comments of administrators in regard to CETA were overwhelmingly negative. One VTE director said he "has nothing to do with them, by choice." They consider CETA to be in competition with VTE by providing too much training outside of local institutions and encroaching upon other delivery systems. They consider the program ineffective because disadvantaged workers are not given an education but, rather, placed with a public employer by means of a subsidy, and the employer will not hire the worker on a permanent basis once the subsidy is discontinued.

CETA is a federal program to alleviate unemployment among the young and poor. Unemployment rates continue to be alarmingly high among these groups. In May, 1977, the Labor Department reported national unemployment rates of 16.1 percent for youth of 16 to 19 years and 10.4 percent for youth of 20 to 24 years. For blacks and other races these figures climb to 36.5 percent and 22.2 percent, respectively. VTE addresses itself to training precisely these age groups to prepare them for permanent employment. Given the funding limitations inherent in VTE and the presence of CETA to supplement those efforts and those funds, and given the gravity of the problem of unemployment among young people, it is important that these two systems coordinate their efforts in order to complement rather than compete against each other. A logical starting point is with CETA representation in the coordinating councils. The experience of those counties where this cooperation is taking place is that the community colleges and the school systems can be geared to provide training and support services for CETA clients in return for CETA funds, while CETA can subsidize immediate employment and on-the-job training in public

agencies for its clients. This arrangement prevents inefficient duplication of tasks by enabling each system to provide the services it is best geared for.

Program Planning

An aspect of VTE administration that is very sensitive to accurate labor market information is program planning. The Vocational Division requires vocational offerings to reflect and respond to labor market needs, and program planning must emphasize the efficient allocation of the state's limited resources (Trapnell, 1976). VTE administrators interviewed were of the opinion that program planning should be done at the coordinating council level in cooperation with the area planning office and the State Department of Education (DOE). Some claimed that at the present time the DOE centralizes too many of the planning functions.

The difficulty with resting the main responsibility for planning on the coordinating councils is that the councils' geographic coverages often do not correspond to the boundaries of their labor market. The possibility is left open for program duplication and competition across community college districts serving the same labor market. Moreover, some programs are clearly oriented toward a statewide rather than a local market (e.g., nuclear medicine, opticinary dispensing technology, police administration). The needs for these may require identification at the state level. Thus, program planning must be carried out at both the local labor market and state levels in a coordinated fashion.

In talking to various VTE administrators, it appears that those at the community colleges have more flexibility in starting and stopping programs at the job preparatory level in response to changing labor market needs. Their procedure for program evaluation calls for (a) gauging labor market conditions, the available jobs and their anticipated growth; (b) evaluating the skill content of the various occupations, with emphasis on the effect of technological changes on training

requirements; (c) calling on firms directly and consulting with the advisory committees; and (d) evaluating other supply possibilities. In addition, the community college division requires a technical review of proposed new programs which includes an assessment of their present needs and future economic impact as well as their impact on target groups such as women, blacks and disadvantaged workers. By contrast, school districts often have less ability to modify program offerings.

The accurate assessment of labor market needs is the first difficulty in light of the inadequacy of present information and assessment methods. The most common practice is to carry out a business needs survey by using students and faculty to directly contact employers. The handicaps inherent in this method have already been pointed out, and the experience of local planners is often one of frustration due to the inaccuracy of such procedures especially when there is a change in overall business conditions. The result is that often new programs are justified almost exclusively on student interest which does not necessarily correspond to conditions in the labor market.

5.4.3. Funding

In Phase One of our report it was pointed out that a complete and consistent analysis of the costs and funding for VTE programs is not now available. Hence, we are limited to some rather coarse analyses of existing funding data. In large measure, this is because of the limitations of funding and costs data available from the DOE management information system.

First, the expenditure data published by the Department of Education are voluminous, and so complex as to make it exceedingly difficult to interpret and analyze. For vocational programs, expenditures are listed by program cost category but not by program area or cluster. Thus, it is difficult to determine the funding received by particular areas, such as agribusiness or industrial arts.

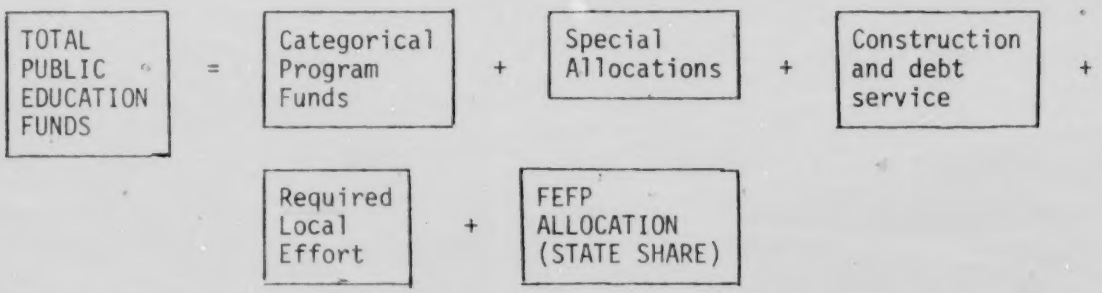
Second, since funds generated by particular programs are not earmarked for

spending in that given program, substantial redistribution of revenues takes place at both the county and school levels. This also makes difficult a comparison of revenues generated and funds actually spent.

Third, expenditures are not disaggregated for pre-secondary, secondary, and post-secondary programs, as is done for basic (K-12) programs. Therefore, we cannot compare the expenditures for VTE programs at different grade levels.

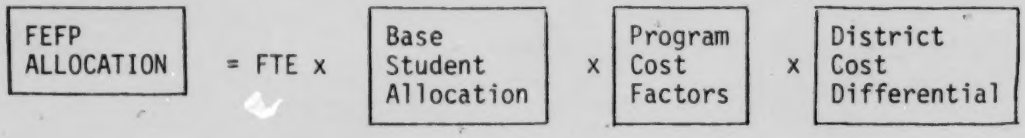
The FEFP Formula

The current VTE funding process is based on the Florida Education Finance Program (FEFP) passed by the Florida legislature in 1973 and since modified. The key feature of FEFP, as stated by the Division of Public Schools, Florida Education Finance Program (1976, p. 1), is "to base financial support for education upon the individual student participating in a particular educational program rather than upon the numbers of teachers or classrooms." The funds received by a given school district for public education are described by the following formula:




Categorical program funds apply to specifically funded programs, whether general or transitional. Special allocations of state dollars to districts fund such special needs as environmental education projects or instructional materials for the visually handicapped. Additional funds are provided for comprehensive school construction, capital outlay and debt service. Local tax effort is required to share in the total costs and both rich and poor counties must apply equal tax efforts though not equal dollar amounts.

The FEFP allocation, or state share of basic amount for current operation is generally computed as follows:




Base student allocation is determined annually by the Legislature and, for 1976-77, is $754.51. Program cost factors attempt to reflect the relative costs of various educational programs and range from 1.00 for grades 4-9 basic to a high of 15.00 for hospital and homebound part-time students. The six VTE cost categories range from 1.17 for instruction in entry skills to a high of 4.26 for such programs as emergency medical technology. District cost factors are designed to allow for variations in costs of living and of supplying educational services among counties. In the Tampa Bay area they range from a low of 0.94632 in Pasco County to a high of 1.00088 in Pinellas County.

The Cost of Vocational Programs

Total FEFP expenditures for vocational programs per FTE weighted by program cost factors are listed below for Regions Eight and Four, their component counties, and the State, together with weighted FTE student count, for the 1975-76 academic year.

Total FEFP Expenditures per Weighted FTE and Weighted FTE Student Count for Selected Vocational Programs, 1975-1976

| | Costs per Weighted FTE | Weighted FTE |
|---|---|---|
| Hillsborough | $757 | 21,360 |
| Manatee | 788 | 4,321 |
| Pasco | 825 | 5,226 |
| Pinellas | 741 | 26,580 |
| Subtotal | 758 | 57,527 |
| Baker | 628 | 588 |
| Clay | 748 | 1,997 |
| Duval | 924 | 16,806 |
| Nassau | 709 | 1,419 |
| Putnam | 695 | 1,647 |
| St. Johns | 741 | 3,025 |
| Subtotal | 855 | 21,038 |
| Florida | 743 | 306,484 |

Source: The Annual Report of the Commissioner of Education, Division of Public Schools, Volume II; and unpublished data supplied by the Department of Education.

In Phase One of our report we stated that VTE programs appear to exhibit economies of size, i.e., the larger programs (in terms of student count) tend to be lower cost programs (p. 194). This was based on our calculations of costs per FTE student in VTE, which showed costs to be lowest in Duval, followed by Clay, Nassau, Baker and St. Johns. On the basis of the published data now available for Region Four and shown in the table above, the conclusion of economies of size in VTE programs cannot be supported. Indeed, now we find that in Region Four, costs per weighted FTE are highest in Duval, the county with the largest program. St. Johns County, with a weighted FTE that was 50 percent larger than Clay, showed approximately the same cost per weighted FTE. Baker, Putnam and Nassau counties--those having the smallest programs--exhibited the lowest cost per weighted FTE.

However, in the Tampa Bay area the argument of economies of size in VTE programs does receive greater support. Pinellas and Hillsborough counties, each with weighted FTE's

larger than the total for Region Four, show lower costs per weighted FTE than Pasco and Manatee counties, with substantially smaller programs. Yet Pasco had 20 percent greater weighted FTE than Manatee, while its cost per weighted FTE was $37 greater. Our conclusion is that an inverse relationship between cost per student and size of vocational program in the Florida school districts surveyed--that is, economies of size in VTE--cannot be found to occur with any consistency. Indeed, there seems to be no explicit relationship between size of program and cost, so that variations in cost of VTE among the districts are due to factors other than those considered in this study. An in-depth analysis of program funding and the distribution of FEFP funds by school district would be required in order to fully understand district cost variations.

For example, a comprehensive cost analysis would examine cost variations across districts as well as across programs. In particular, there are three questions to be explored: (a) To what degree are district cost differentials the result of differences in program mix between rural and urban counties? (b) To what degree are they the result of cost differentials for the same program in different districts? and, (c) Are the observed differential expenditures really "cost based" or do they primarily reflect revenue variations across districts?

Allocation of Funds Among Programs Within School Districts

Notwithstanding district cost variations, the funding formula would seem to provide adequate revenues for operation of VTE programs if all funds allocated were spent on those programs. However, as pointed out in Phase One, county school boards and their superintendents and community college presidents are not required to provide the VTE programs with all of the funds which these programs generate.

Florida Statutes specify that "by the 1976-77 fiscal year, 80 percent of current operation funds of the Florida education finance program shall be expended by basic

program cost categories in each school that generates the funds and by special program cost categories in the district that generates the funds" (Subsection (3) of §237.34, Florida Statutes, as amended). Categorical program funds are to be expended only in the program for which funds are provided. A number of observations can be made regarding the wording of the regulation and its effects for implementation.

First, the regulations refer to expenditures by program cost category, not by program area or cluster. This means, for example, that agribusiness need not receive 80 percent of the funds it generates but, rather, all programs in cost category I must receive 80 percent of the funds generated by that category. This allows for considerable leeway in funding across program areas which include courses in a number of cost categories.

Second, the law requires that, in the district, funds be spent by special program cost categories but, in the school, only the basic (K-12) program cost categories need receive 80 percent of generated funds. Vocational programs, which fall under the special programs category, must receive 80 percent of the funds they generate in the district, but these may be allocated among schools at the discretion of the superintendent's office. Basic programs, however, must receive 80 percent of the funds they generate in the school that generates them. The rationale for differential treatment is that basic programs exhibit relatively constant costs per student across schools, but that vocational programs have a higher component of equipment and supply costs that vary greatly across schools. It is necessary, therefore, to have the flexibility at the district level to shift funds from a school with vocational programs generating ample funds but with relatively low costs (e.g., a new comprehensive high school) to another with programs having a smaller weighted FTE but with substantial costs (e.g., an older school with depreciating equipment).

Third, the regulations specify how funds shall be expended for the costs of the programs. Included in the costs are direct costs of the program itself--salaries, employee benefits, purchase services, materials and supplies, capital outlay--and indirect costs, both school and district. School indirect costs refer to prorated amounts for salaries of the principal, teachers, and other personnel, school maintenance, utilities and insurance, and all other costs at the school level. Similarly, district indirect costs include prorated amounts for salaries and fringe benefits of the superintendent and all other district staff, as well as for all other costs of a district level nature.

For the 1975-76 fiscal year, indirect costs amounted to 45.3 percent of total program costs for all school vocational programs in the state compared to 37.7 percent for exceptional programs and 45.0 percent for basic programs (1975-76 Program Cost Analysis for Florida Schools, 1976, p. 14). Also, there appears to be considerable variation in indirect contributions across districts in the state. There is considerable debate over the share of indirect costs accruing to vocational education. Opponents of the present system of allocation claim that it is arbitrary and that it unfairly limits the funding available for direct program costs. We believe that this matter deserves careful study.

The way the funding system is structured means, in practice, that the superintendent and his staff have considerable discretion over the funding of particular programs and VTE programs in particular, within the guidelines established by the legislature. The adequacy of VTE funding thereby depends in large measure upon the commitment of the superintendent and other district administrators to vocational education. In one county, VTE administrators point to significant "skimming" of VTE funds at the district level (i.e. funds generated by VTE programs were not spent on VTE programs), while in another, the commitment of the superintendent to VTE is stressed as resulting in generally adequate funding.

Moreover, significant discretion also exists at the school level for the principal to allocate funds between academic and vocational programs and support services and overhead costs. At some schools VTE program directors and instructors complained over their principals' emphasis on academic programs and the consequent burden placed on VTE generated funds.

The problem of skimming also appears in community college VTE programs. One Dean of VTE stated to us that the president of his college was not supportive of VTE, but he was, oriented toward liberal arts and university preparatory courses. It is clear that the allegations of skimming are widespeard throughout the system. We believe that this matter deserves a careful study.

Additional Causes of Funding Unevenness

Other factors present in the current system of VTE funding cause inadequacies and promote program unevenness. First, our field work revealed that many VTE administrators and instructors are dissatisfied with the way program cost weights are determined. In particular, they claim that not enough consideration is given to equipment depreciation and supply costs. Indeed, the Advisory Council's Annual Report (1976, p. 54) points out that many vocational courses are funded in the wrong cost category, with courses having the highest costs per FTE being found in all six cost categories.

Second, the system of priority fundings for facilities and operating costs provided by the federal government was biased in favor of new programs and facilities and against established programs. The categories of priority funding were (1) new VTE programs housed in a new facility, (2) new programs housed in old facilities, and (3) ongoing programs housed in old facilities. A new statute has modified these criteria, and it incorporates the notion of "adequacy of facilities" as an influence on the funding formula. The funding system was inherently biased against established programs in older schools or schools with flexible

structures as opposed to permanent buildings. VTE administrators and teachers at new schools with new equipment funded through priority one funds generally expressed satisfaction with the funding, at least with respect to facilities and equipment.

Third, priority fundings provide for equipment in new programs, but little money for the costs of operating new programs, particularly for supplies. A large number of instructors complained of the inadequacy of funding for needed supplies. Some schools raise supply funds by selling food, candles, etc., to students, or by allowing students to take home the projects designed or constructed in their vocational classes, thereby enabling instructors to charge the students for materials used. In both cases, the burden of funding supplies is placed on the students and their families which goes against the concept of public education.

Other schools have vocational programs that generate their own funds. Examples of these are cosmetology programs serving senior citizens and the community at large, agricultural programs that sell produce and cattle to the public, automotive repair programs that work on teachers' and students' cars, and one construction trades program involved in building a single-family residence which, when completed, will be sold on the market. In some cases these self-funding programs provide a substantial surplus to the school which it then uses to purchase supplies for other programs.

Fourth, well-funded programs often perpetuate their advantageous position by soliciting federal grants for added funds which are channeled through the Vocational Division. In one community college it was pointed out that federal grants provide for much of the funding for new equipment in ongoing programs, but that the preparation of these grants takes up much of the teachers' time. At one comprehensive high school the Department Chairman of a high quality Business Education program is actively involved in preparing grants. In both cases the

availability of more and better faculty enabled these departments to free administrative and teaching time for grant writing while in other schools teachers constantly complained that their regular administrative work already takes up much of their (unpaid) time outside of school.

The impacts of the new statute, which allows for the "adequacy" of facilities, on the funding process is not known at this time.

5.4.4. Student Needs

The primary goals of VTE programs are to increase the employability and wage earning potential of students. Phase One of our report pointed out that the results have been mixed at both the national and state level, with one study yielding evidence that only 25 percent of the trainees actually get jobs in their specific fields of training, and 50 percent of the graduates seek additional education (p. 155).

Results of the Student Follow-Up Survey

We have evaluated the summary results of the Florida Vocational Education Student Follow-Up Survey for fiscal year 1974-75 for the four counties of the Tampa Bay area. We believe the Follow-Up Survey is subject to four major criticisms. First, the sample of surveys addressed and the percentages of returns--58.2 percent for the counties as a whole--are too small for statistical significance. Thus, it may be inaccurate to derive any conclusions for the graduates as a whole from such a small sample. Second, no sample has been undertaken of the 41.8 percent of non-respondents. It may be that there is a self-selectivity bias among respondents, i.e., the respondents may be biased in favor of graduates that have proven successful in finding employemnt in their field of training. Third, the Student Follow-Up

Survey does not differentiate between graduates of job preparatory and pre-job preparatory programs, making it impossible to determine the success of those programs for which placement is an important criterion. Fourth, we have noted that the placement of VTE graduates is highly sensitive to business cycle activity. Moreover, employment opportunities for some occupations is even more variable over the cycle than for other occupations. This is especially true for many industrial occupations and for building trades. The present Student Follow-Up Survey was carried out at one point in time and reflects the level of business activity for that time period. Generalizations should not be made on the basis of the results of one survey. It is necessary for surveys to be conducted annually over a longer time period so that the effect of fluctuations in economic conditions on VTE placement can be assessed.

Nevertheless, the results shown below can shed some light on the success of VTE programs in fulfilling their stated goal.

Selected Results of the Florida Vocational Education Student Follow-Up Survey, 1974-75

Percentage of total respondents

| | Employed (since leaving program) | Employed in specific field of training | Employed in field related to training | Currently in school (part-time and full-time) |
|---|---|---|---|---|
| Hillsborough | 47.2 | 19.3 | 15.8 | 43.5 |
| Manatee | 57.3 | 29.7 | 16.3 | 30.0 |
| Pasco | 40.5 | 15.1 | 15.9 | 44.7 |
| Pinellas | 45.9 | 22.2 | 14.7 | 41.6 |

Source: unpublished data supplied by the Department of Education.

The figures are not encouraging. They point to a limited success in placing trainees in jobs in their specific or even related fields of training. For example, the number of trainees employed since leaving the program varies from a high of 57.3 percent in Hillsborough to a low of 40.5 percent in Pasco.

Factors Affecting Placement of VTE Graduates

One reason for the limited success is that many VTE programs, particularly at the secondary level, are not job preparatory but rather pre-job preparatory. That is, they do not provide training for immediate employment at the entry level but, rather, are exploratory or pretechnical in scope. Their success, therefore, cannot be measured using placement as the exclusive criterion.

Second, the lack of good occupational employment information hinders placement. The information generally available to occupational specialists and counselors is confined to descriptions of various occupations, their earnings and working conditions. Information on openings by occupation is often available at the national and state levels but seldom at the labor market level where it is most relevant. VTE administrators consistently expressed lack of confidence in the data available from Tallahassee. Moreover, no information is available at the labor market level on wage rates and earnings for particular occupations. The absence of this crucial information was noted by a number of occupation specialists and counselors during the course of our field work.

Third, occupational specialists generally have not established nor maintained cooperation with the Florida State Employment Service (FSES). Franchak (1976) argues that the two institutions involved in job placement have non-competing goals. The primary mission of the employment service is to meet immediate manpower needs. Schools, on the other hand, are fully committed to the long range career development of the individual. Career guidance may lead to placement or to further education, depending on the student. Yet, VTE administrators and occupational specialists interviewed in the Tampa Bay area seldom considered information from ESES as useful, nor have established coordination with the agency.

Moreover, there were serious doubts raised about the effectiveness of guidance counselors. Some VTE instructors complain that counselors are academically oriented and discourage students from entering VTE programs. Others said that counseling is often reduced to scheduling classes. The results of the follow-up survey point this out clearly. Of 2,712 respondents that had been employed since leaving the vocational program, only 1.1 percent listed their occupation specialist or their guidance counselor as having assisted them in securing their job. Only 2 respondents listed the State Employment Agency. By contrast, 22.5 percent listed their vocational teacher, supervisor or cooperative education coordinator.

A fourth element contributing to difficulties in placing VTE graduates is that the skill levels of trainees often do not correspond to those required by employers. One business instructor stated that in his field there is a shortage of qualified graduates to fill openings and that in these programs students often need additional training. By contrast, other instructors, especially in the industrial and agricultural trades, complained that openings are at skill levels far below those of graduates, e.g., openings for laborers as opposed to skilled workers.

Cooperative Programs and Placement

The most effective method of placement is through cooperative and work experience programs where students are employed part-time while pursuing their training. In comprehensive high schools coop programs are often found in business, distributive (retail sales), home economics, and social service, but not too often in agriculture or industrial trades. Program coordinators generally request applications from 10th grade students for the type of job in which they are interested and the students are counseled on a related VTE program. Placement in coop programs is almost always arranged by the coordinators and instructors directly through business contacts. Businesses are generally cooperative in these efforts and employers tend to retain their coop workers through slow seasons. Nevertheless, it was noted that placement

has been more difficult during the recession.

Some schools have found it difficult to place students due to lack of awareness in the local business community of VTE and coop programs offered in the schools. One school, has approached the problem by advertising its coop programs in the local media. This is a productive effort that perhaps can be followed by other schools to increase publicity as to their program offerings.

Coop programs in the industrial and technical fields have been much less successful. Two possible reasons are noted. First, the industrial sector is generally dominated by larger firms that are often unionized. The building trades are also heavily unionized. The almost complete lack of contact and coordination of coop placement--as well as VTE in general--with organized labor hinders placement in these areas. The attitude of apprehension and competitiveness on the part of labor toward VTE could certainly be minimized if a greater effort were made to assure labor that VTE does not want to compete with them. A tendency of VTE to concern itself with the needs of the business sector while excluding consideration of the needs of and coordination with labor organization has apparently contributed to this absence of cooperation. Second, industrial and vocational programs are often over-burdened with poorer quality students, which will be discussed in detail below. Since coop programs tend to be highly selective to maintain their reputation within the business community, these students are seldom placed.

School-Industry Education (SIE) programs are also available in some school districts. This differs from regular coop programs in that a student begins working in the 10th grade and may fulfill his graduation requirements for the 12th grade by working on the job. Furthermore, SIE trains students at the job-entry level prior to placement and finds them jobs directly in their fields of training. Finally, the

work experience program is designed for employment for potential early leavers (dropouts) and students with financial need at the 9th and 10th grade levels. It is supposed to identify potentially problem students and provide them with a direct link between school and employment, thus increasing their motivation and preventing disruption in the classroom. But teachers agree that work experience captures only a portion of these problem students.

The Handling of Disruptive Students

Without question, one of the most difficult problems faced by the public school system is the proper method of dealing with disruptive students. These individuals often share a disadvantaged socio-economic background of poverty, broken families, low motivation, and poor basic skills. There is agreement among administrators and teachers that VTE has in the past been used as a "dumping ground" for problem students as a result of an academic bias against VTE. However, VTE programs have, in recent years, been elevated in stature both at the state and national levels. The "dumping" of problem students into VTE reduces program effectiveness. Moreover, this practice is probably not an effective strategy for dealing with disruptive or so-called problem students. Policies for dealing directly with this issue deserve serious consideration.

The practice of "dumping" in VTE has been reduced somewhat in programs stressing co-op. But dumping remains widespread in pre-vocational programs such as industrial and building trades. One industrial education instructor bitterly complained that 40 percent of his students are below their grade level in reading. Problem students are taken out of academic programs and placed in his classes throughout the year, causing disruption and safety problems. The result is that the quality of the programs are reduced and theft and vandalism increases. Students showing interest in the program are aggressively helped by teachers while the rest are asked to leave the classroom or simply tolerated and ignored.

The administrators say that this problem has no easy solutions. The commitment of the public school system to provide education for all, coupled with an increasing number of disadvantaged, underskilled students places the school administrator in an unenviable position. He must try to find places for these students where they may gain at least a cursory knowledge of basic skills and a vocation, or, at the minimum, reduce their disruptive effects upon other students. Special remedial and tutorial programs show some promise and work experience programs provide some with jobs, encouraging them to remain in high school until graduation. Comptency-based programs are also a step forward in increasing program quality. But the problem remains.

One indication of the failure of public education to incorporate all students into the educational system and provide for their overall needs is the large number of high school early leavers or dropouts. The estimated number of dropouts as a proportion of unweighted FTE in grades 10-12 for the 1975-76 school year ranges from 9.7 percent in Manatee and 14.7 percent in Pasco to 19.0 percent in Pinellas and 22.1 percent in Hillsborough. As a percentage of high school graduates, the figures rise to 34.4 percent in Manatee, 39.6 percent in Pasco, 49.1 percent in Pinellas and 68.3 percent in Hillsborough (Annual Report of the Commission of Education, Division of Public Schools, Volume II, p. 158).

These figures provide an indication of the alienation suffered by many students in their schools. Their inability to perform successfully, particularly in academic and in VTE programs, breeds disruption in the classroom, to the detriment of other students. With most VTE programs maintaining an open-door policy, administrators and academic guidance counselors still exhibit a tendency to "dump" problem students into these programs.

5.4.5. Target groups

An in-depth analysis of the performance of VTE with respect to particular target groups is beyond the scope of this project. First, this study did not include an analysis of exceptional programs, which cover most programs specifically relating to mentally and physically handicapped as well as disadvantaged students. Second, an analysis of such issues as bilingual education and occupational sexism require specific, detailed studies and cannot be adequately covered in a study limited to vocational education and particularly its relation to the labor market. Nevertheless, some comments and impressions did surface in the field work regarding these target groups.

Handicapped Students

In Section 5.3.6. we stated that handicapped students are defined as having mental or physical handicaps requiring special educational services. From interviews with vocational administrators and faculty, it is clearly incorrect to use placement as the criterion of success of programs for the physically or mentally handicapped. Mentally handicapped, or Educable Mentally Retarded (EMR), students are taught basic academic and homemaking skills. In some cases in which they are trained for particular occupations, such as labeling mail bags, they may be unsuited for the needs of the labor market. Such programs use resources which could be more effectively employed in other ways. Physically handicapped students are generally incorporated into regular vocational programs, or if severely handicapped, they are bussed to special facilities elsewhere in the county. Some schools and community colleges have special programs for deaf or blind students in business and computer science.

One serious problem appears to be a tendency to classify disadvantaged students in the same category as EMR's or other mentally handicapped students. This results

from ignorance on the part of some administrators and students as to what constitutes mental retardation and how it differs from learning disabilities, educational deficiencies or lack of social skills. However, there appears to be an increasing awareness of these differences among teachers and administrators, owing to better training as well as to the increasing implementation of exceptional programs for students with learning disabilities and for the educationally deprived.

Occupational Sexism in VTE

The association of particular occupations and male/female roles continues to exist but appears to be slowly diminishing. VTE administrators continually stressed in the interviews that any program is open to either sex. Guidance counselors encourage students to pursue their occupations of interest regardless of its sex role association. But tradition and family and group pressure continue to cause students to stereotype particular occupations. The result is that few females are yet to be found in programs such as industrial and building trades and automotive repair. Likewise, few males enroll in vocational programs leading to occupations traditionally reserved for women, which are generally extensions of homemaking skills, such as home economics, culinary arts and social services. This is clear from the data presented in Section 5.3.3., showing concentration of female enrollment in such program areas as consumer and homemaking, home economics gainful, and office and health occupations.

The solution lies not just in ending institutionalized sexism, but also in establishing "affirmative action" programs in VTE to encourage students to enroll in non-traditional occupations. Examples of these are efforts by one vocational-technical center to encourage 9th grade students to enroll in non-traditional occupational programs in their presentations at local junior high school assemblies,

and attempts to break occupational sex roles by introducing students to programs associated with the opposite sex in junior high school exploratory programs. However, we noted that the majority of students in programs at the 7-9 grade levels are to be found in agribusiness, industrial arts and home economics gainful, the areas with the greatest concentration ratios. The data thus imply that exploratory programs are not yet fulfilling the task of exposing students to nontraditional occupations.

Bilingual Programs

The Tampa Bay region is not the ideal area for evaluating the need for or effectiveness of bilingual education programs. This is because the percentage of hispanic students in the school system is lower than the state average in every district, and no other large group of non-English speaking students exist. As the table below shows, hispanic students as a percentage of total fall membership ranges from a low of 0.23 percent in Pinellas to a high of only 4.93 percent in Hillsborough. This contrasts with the state figure of 6.43 percent and a high of 32.28 percent in Dade County.

Percentage of Hispanic Students in the School District and of Hispanic Enrollment in VTE Programs for the Tampa Bay Area and Florida, Fall 1975

| Counties | Hispanic students as a percentage of total fall membership | Hispanic enrollment as a percentage of total enrollment in VTE programs |
|---|---|---|
| Hillsborough | 4.93 | 3.13 |
| Manatee | 2.03 | 0.35 |
| Pasco | 1.07 | 0.12 |
| Pinellas | 0.23 | 0.08 |
| Florida | 6.43 | 2.67 |

Source: Profiles of Florida School Districts, 1975-76, and unpublished data supplied by the Department of Education.

Nevertheless, it is evident that very few inroads into bilingual education have been made in the Tampa Bay region. The basic reason is the lack of awareness of the problem and of commitment to a solution on the part of teachers, administrators, and the community as a whole. One VTE director in Hillsborough County summed up the general attitude with the comment that bilingual students do not need special programs and, therefore, that bilingual programs are useless and wasteful of time and money. Although there are relatively few hispanic students in this area, the above attitude has served to hinder the development of effective bilingual programs.

In one of the few high schools visited where a bilingual education program for spanish-speaking students existed, the teachers expressed the view that traditional english teachers are reluctant to let their students transfer to bilingual programs if they are able to speak english. Teachers often fail to understand that often these students have great difficulty in reading and writing. The problem is particularly acute for children from low-income, undereducated families who often cannot read and write either language. It is less serious for recent arrivals from spanish-speaking countries, i.e., if students have a solid base in their native language, learning to master English becomes much easier. Moreover, the existing programs do not merit the title of bilingual, but, rather, of English as a Second Language (ESL) programs.

At the community college level, some programs exist in Hillsborough County for basic skill training for spanish-speaking students, and ESL programs for Middle-eastern students have been established at St. Petersburg Junior College. Yet bilingual education programs are most effective when implemented at the primary and secondary levels.

Particularly difficult is the problem of bilingual education for hispanic children of migratory workers. In their case, language deficiencies are combined with economic disadvantage and continual migration, which separates the children from the schools in the middle of the academic year.

A federally supported project for bilingual education (Elementary and Secondary Education Act of 1965, Title VII) entitled "Project Chicano" has been in effect in Pasco County during 1975-76 and 1976-77. Federal funds have been provided for a pilot program in bilingual education in three Pasco County schools for grades K-3. No programs exist at grades 4-12 and no funds are made available by the school district for bilingual education.

The problem of bilingual education is statewide. A comprehensive solution is unlikely until a state policy on bilingual education is developed and established by law.

5.4.6. Faculty

A large number of VTE instructors were interviewed in the course of the field work in the Tampa Bay area. As a whole, the background of instructors at the secondary level was qualitatively different from that of faculty in the community colleges, as would be expected. The former have a minimum of a high school diploma and six years of prior technical experience, though many have or are working toward a college degree. Most community college instructors have bachelor's degrees and many have master's degrees, as well as experience in their field.

Some VTE administrators in high schools and area centers expressed the need for higher qualifications particularly among industrial arts and mechanical trades instructors. These generally have a high level of technical expertise but lack teaching and curriculum planning skills. Qualified industrial and mechanical trades teachers appear to be in short supply. This reveals the need for more in-service training of VTE instructors, particularly in the areas mentioned. Already, in-service training has been established in many counties. For example, in Hillsborough there are countywide in-service workshops to increase teaching quality and help instructors to keep up with changing technology in their fields. In

Pinellas, Training Vocational Teachers (TVT) programs and workshops are used to increase the competency of faculty, and a number of instructors interviewed at Pinellas Vocational-Technical Institute were taking courses at the University of South Florida.

Instructors' attitudes were mixed in regard to utilization of craft or advisory committees. Some instructors find craft committees useful in curriculum development and placment, although they tend to overstate labor market needs and are not concerned with the possibility of over-training of students in the long run. However, most instructors interviewed considered craft committees useful only for planning or establishing new programs and saw no need for them in ongoing programs. The generalized lack of active craft and advisory committees probably robs programs of an institutionalized structure that may aid in upgrading programs and placement of students.

From the field work in the study area the most serious difficulty facing VTE instructors is their dissatisfaction with working conditions and salaries and their correspondingly low morale. The recession reduced revenues in the state and counties and these countered by reducing funding for education, both in school districts and community colleges. This, added to the fact that there is a general oversupply of teachers in many programs has resulted in lower salaries for teachers and less bargaining power for teacher unions. Previously full-time community college instructors have been reduced to part-time often without a corresponding reduction of course loads. Some counties have a large proportion of older voters without school-aged children who have shown little support for bond issues designed to increase the funding of public education. Faced with a lack of support from both the administration and the community many teachers have become discourage and have responded by doing as little as possible in their classrooms, or leaving the teaching profession completely. The low morale found among many teachers is most likely resulting in a reduction of the quality of

public education, with the corresponding loss being felt by the students themselves. It is clear that without a deep-seated commitment to adequate funding of education at all levels, in both the state and local governments, designed to increase teacher salaries and reduce class loads, the quality of education will decline, regardless of the quality of facilities or of supporting studies such as this one. In particular, more accurate labor market information may be of limited use if the delivery systems are incapable of responding to changes in the labor market due to inflexibility or inadequate funding.

5.5. Business and Industry Needs

When the need for VTE is assessed in an urban area, the needs of business and industry are typically addressed only indirectly. In recent years there has been an increased emphasis on developing accurate labor market information to improve VTE program planning so as to increase placement of VTE graduates. In addition, some VTE coordinators have endeavored to make more effective use of their craft advisory groups in curricula planning. However, rarely are business and industry personnel officers directly and routinely queried as to their needs with regard to VTE programs or as to their opinions about VTE graduates. As a result little effective information is available on business and industry needs.

This situation is unfortunate because an improvement in communications between the business sector and VTE educators has the real potential for improving the efficiency of local labor markets. Due to the present state of imperfect information in urban area labor markets, search costs for both firms and VTE graduates are higher than necessary. In addition, VTE program planning and industry personnel planning are both made more difficult and expensive. In fact, because VTE educators are producing skilled workers for an urban labor market and firms are hiring workers from the same urban labor markets, both groups would gain from improved communications and better labor market information.

While this idea is straightforward enough, there are important institutional constraints which mitigate VTE/industry communications. On the one hand, some business officials distrust the educational establishment and many firms, for a variety of reasons, perfer to do their own in-house training. On the other hand, VTE educators are divided on the issue of whether VTE training should serve the needs of business and industry as reflected in the labor market. Some educators feel that VTE training should be general and tailored towards development of the individual student. Further complications arise because the VTE coordinating councils do not formally include industry representatives. This is unfortunate since the coordinating councils are designed to improve the program offerings among the various VTE delivery systems in a labor market area.

Potentially a wide range of techniques exist for assessing business and industry needs ranging from direct survey work to statistical analysis. We felt that a conference conducted in a workshop atmosphere with participation from VTE officials, labor market analysts, and personnel directors from the area's largest employers would be the most productive procedure. We discussed this idea with VTE officials and members of the business community and we were encouraged at the response.

The Business-Industry Workshop

To evaluate the feasibility of the workshop approach to industry needs assessment we decided to hold such a workshop in the Jacksonville SMSA. We selected Jacksonville as the test site for three reasons. First, we learned a good deal about the labor market and VTE delivery system in the Jacksonville SMSA from our Phase One study. Second, we had developed a rapport with the county VTE coordinators in the region. Finally, Mr. Frank Peterson, a former advisory council member from Jacksonville, offered his help in bringing local personnel directors to the meeting.

The workshop was held on Tuesday, June 7, 1977 in Jacksonville. Appendix A contains: (a) a background paper sent to each of the participants, (b) the workshop agenda, (c) a list of workshop participants, and (d) written statements

from the participants. Our agenda was quite simple. We planned no speeches or presentations, rather our goal was to bring the participants together and to have them express their needs and concerns with regard to: (a) needs of VTE programs and how business and industry can facilitate such needs and (b) how business and industry needs could be better met by VTE programs in the Jacksonville area. Below, we first discuss the main points brought out during the workshop. Then we evaluate use of a workshop to assess business and industry needs.

Areas of Concern

One important area of concern identified by the workshop is labor market information. Both educators and business officials noted that although great improvements in the quality of local labor market information has occurred in recent years, the existing information systems are still inadequate for many decision making purposes. A basic problem is that many federal, state, and local agencies produce labor market information and make it available to local decision makers. However, the information is neither coordinated and made internally consistent nor is it packaged in a manner which facilitates effective use. Local decision makers are not trained labor economists, and the welter of often conflicting statistics based upon differening methodologies and labor market concepts is often confusing to users.

Additional problems are created because of the drive for ever more geographically disaggregated information. Since secondary school officials are charged with developing program plans suited to the labor markets of their home counties, they desire accurate, detailed, county level, labor market information. However, counties are typically not functional economic areas. From a conceptual point of view labor market forecasts can only be accurately undertaken for a functional labor market given the current state of the art. Thus, county level analyses are often misleading. Further exacerbating this situation is the fact that the forecasts are produced in a "top-down" fashion with little or no provision for feedback

from local area educators or businessmen. The end result is that decision makers must conduct spot surveys and expend considerable amounts of energy to generate the labor market information necessary for decision making purposes.

A number of suggestions were offered to ameliorate this situation. First, some coordination and packaging of the existing information provided would be beneficial. In this way duplication could be eliminated and the information could be better coordinated. Furthermore, a narrative including a background analysis and summary would be most helpful. Second, with a greater coordination of information and less duplication, more resources could be freed to improve the quality of local labor market information. A closer coordination with the business community, particularly the numerous smaller firms in the area, would provide benefits. What may be needed are several labor market coordinators, to coin a phrase, who would service a group of firm "clients", gathering labor market data and interfacing with sources of labor including the school systems, CETA, and the like. These coordinators could augment the existing efforts of school placement officers, the Florida State Employment Service, and CETA. Furthermore, the coordinators could facilitate the placement followup reprots from industry. Finally, the coordinators would provide a formal channel of communication between educators, labor analysts, and the business community.

A second problem area identified by the workshop are the conflicting educational goals of VTE. There are three areas where VTE goals are in conflict. First, who should VTE programs serve? Should the programs concentrate on those who live in the local community or on those who work in the local economy? Furthermore, on what target groups, if any, should VTE focus upon - underpivileged, handicapped, slow learners, fast learners? Second, should local VTE programs attempt to serve only their local economies or should they strive to also train students for jobs in the state and national economies? Third and more generally, what is the proper orientation of VTE training? Should training be oriented towards providing specific

entry level skills to insure employment in the local labor market or should VTE programs be more general and instead of exclusively servicing the local labor market should programs offer generalized training with a goal of developing each student's full potential?

These conflicts vastly complicate VTE program planning. Also, without clear goals program evaluation becomes difficult and frustration develops.

Another area of concern is the VTE delivery system itself. The output mix across institutions providing VTE programs is not clearly identified and some overlaps may exist. Four types of institutions provide VTE programs in most urban areas. Secondary schools provide broad training to high school aged students. This delivery system tends to be long-term oriented and relatively less flexible. By contrast, the community colleges are in general shorter term oriented and more flexible, and they provide specific training to an older clientele. Private proprietory schools also provide specific training and are flexible and short run oriented. Finally, area vocational technical schools tend to serve high school aged students, and they provide more specific training in general than the high schools but are long term oriented. This multifaceted delivery system is often confusing to businessmen, and it appears a bit awkward to manage.

Business and industry have both short term and long term needs with respect to skilled labor. Firms are quite diverse and have a wide array of needs. All firms need workers possessing basic literacy skills. However, this is one of the few generalizations which is possible. For a variety of reasons many firms prefer to conduct their own specific job training. For these firms students with strong literacy skills and a generalized technical background are most desirable. By contrast, many firms desire very specific job skill training in VTE graduates. Finally, a number of firms face very cyclical demands, and they need a VTE system

which can produce trained labor of specific types rapidly.

In conclusion, the needs of firms are as diverse as the firms themselves. This produces conflicting demands upon the VTE system. On the other side of the coin, the VTE delivery system must respond to differing student needs as well as labor market pressure. Generalizations and recommendations are difficult in this area of concern.

A fourth area of discussion revolved around how the VTE product could be improved. Three suggestions were made. First, businessmen and educators agreed that movement away from a graded educational system towards a competency based system would be beneficial. This would allow for more individualized instruction and insure that graduates possessed the requisite skills. Second, greater emphasis on basic literacy education is needed. Too many VTE graduates lack basic reading, communication, and mathematical skills. Finally, educators and businessmen agreed that an expanded cooperative education program would be beneficial. This would improve the attitudes of students and facilitate the difficult transition from school to work. Furthermore, on the job training and applications work could occur, and placement may be made easier. However, there exist a number of impediments including union rules, insurance, and heavy supervisory overhead.

A final area of discussion at the workshop was on communication itself. It was noted that the workshop participants present were probably the best communicators in the area. It is the numerous small firms in the area that are, on the one hand, most difficult to reach, and on the other hand have the greatest needs. In addition, there is little effective communication with labor unions.

There are some exemplary patterns of communication which now exist, and these have given rise to model examples of VTE and industry coordination. Specifically, the Jacksonville Shipyard and Florida Junior College have a close rapport and this

has given rise to a series of specialized programs. Marine construction skills are quite specific, and for a number of years the shipyards conducted their own training programs. However, because of union opposition, high expenses, and unsatisfactory results many of the shipyard's training needs are now met by Florida Junior College. Special training programs have been innaugurated which not only meet the needs of the shipyard but have increased the utilization of school facilities, provided skill upgrading, and resulted in excellent placement records.

Other large firms in the area also expressed general satisfaction with existing communications and find that local training efforts are as a result generally meeting their needs. Furthermore, it was noted that the VTE system has been responsive to the needs of these larger firms.

Thus, communications between the largest employers and VTE officials seems to be adequate. Smaller firms and unions are more problematic. Furthermore, no formal communication channels now exist to insure increasing communications in the future, rather it is through the efforts of existing businessmen and educators that communications are as good as they are now.

Evaluation of Workshop

Having described the proceedings of the workshop and noted the major points brought out during the discussion, we turn now to an evaluation of the workshop as a methodology for assessing business and industry needs. First, it is clear that the workshop identified some important issues and developed some useful suggestions. For example, communications between VTE educators and the larger firms appear to be quite good, and these large firms are generally satisfied with VTE programs. This is not to say that the VTE programs could not be improved, and a series of suggestions on this point were made. However, communication with smaller firms and unions is difficult at best, and we still do not have a feel for the needs of these groups.

Second, the conflicting goals of VTE programs were recognized, the multifaceted nature of the VTE delivery system was discussed, and the varied needs of the business community for VTE were examined. Finally, there was an evaluation of local labor market information and an analysis of potential improvements.

The conference was valuable in helping to assess business needs. However, as a methodological approach to assessing business needs conferences have a number of limitations. First, conferences are one time affairs. They require a great deal of energy to set up, a good deal of background preparation, and a large committment from the participatns. A procedure which is less costly and more on going may be a superior approach. Second, the conference approach does not solve the problem of how to reach smaller firms and labor unions. After the conference we still have not assessed the needs of these groups. Third, a conference approach to business needs does not provide for a formal channel for business input and critique of local labor market forecasts which serve as one of the bases of VTE program planning. Finally, a conference does not seem to do enough to breakdown the impediments to communications between VTE educators and business leaders.

Perhaps what is needed is a formal ongoing procedure for bringing business needs and interests to bear directly on the program planning process. At this time business input is directly solicited and used in curricula planning primarily through the craft advisory councils. Although these councils are not always as active as they could be, they certainly have an important role to play. At the program planning level similar inputs from business would be useful. One potential way to incorporate business needs into the planning process would be to add business officials to the coordinating councils.

Outline

Chapter 6

Overview, Conclusions and Recommendations

6.1. Introduction and brief overview

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## 6.1. Introduction and Brief Overview

This is the second of two studies commissioned by the Florida State Advisory Council on Vocational and Technical Education. The overall objective of the studies is to develop and test methodology for determining the needs for vocational and technical education (VTE) in urban areas in Florida.

The Phase One report was issued in September, 1976. It developed a five-part methodology which was tested in the Jacksonville labor market (defined as Planning Region Four).

The Phase Two study was begun January 1, 1977. The specific objectives of the Phase Two study are:

1. Refine the methodology developed in Phase One for the Jacksonville labor market. Stage a conference between VTE administrations and business personnel managers to better access business needs for VTE, to improve the econometric forecasting model, to refine occupational supply forecasts, to improve crosswalk procedures, to evaluate needs of the handicapped, and to solicit suggestions for improvement of the previous research.
2. Extend the methodology and insure its generality by applying the procedures to the Tampa-St. Petersburg urban area. Test the procedures in Manatee, Hillsborough, Pinellas, and Pasco counties--an economic region centered around Tampa and St. Petersburg. The application to another urban area provides opportunity for further testing and evaluation of the methodology by the same study team. Moreover, with the needs assessment conducted in similar fashion in two different urban areas common strengths and weakness in VTE programs and in the methodology itself can be identified.

We believe that most of the specific objectives of the Phase Two study have been achieved. We are frank to admit that the procedures we have developed have a

number of conceptual and data limitations. Yet, we recommend that our methodology should begin to be implemented for each of Florida's SMSA's, starting with the largest SMSA's first.

As we suggest below, further refinement in the methodology of urban labor market forecasting beyond the techniques we have developed may not be warranted until the basic procedures (though less than perfect) have been implemented. A great deal of mileage can be gained from using some of the crude techniques before further refinement of forecasting models is warranted. On the one hand, identification of further weaknesses and assessment how important they are can come about only through continuous monitoring and application. On the other hand, we believe that further accuracy in labor market forecasting may not be important until the VTE delivery system itself becomes capable of more rapid responses to changing labor market conditions. That as to say, the optimal degree of accuracy in the forecasting techniques proposed must be related to the response capability of the VTE delivery system itself and to the lag times involved in program change.

Perhaps our major finding is that needs assessment per se will have limited usefulness if they continue to be of an ad hoc nature performed without uniform procedures, without common guidelines and on an intermittant basis. Presently, there is little or no comparability of needs assessment studies performed at different times for any given region, and even less can be said about comparability across urban areas in the State.

A second aspect of this problem is the vagueness or "openendedness" with respect to the question of "needs." As suggested in Chapter 2, needs as "needs" can be almost infinite. What is required is a system of setting priorities within a framework of budgets or resource constraints. A listing of priority categories

of needs will not be useful unless the budget constraints are also specified. That is to say needs or priorities can not be realistically set unless budgets are given. Presently, neither priorities nor budgets are identified and analyzed in studies of needs assessments. This is a rather striking omission.

We strongly believe that the next advance in methodology that should be considered by the State Advisory Council on Vocational and Technical Education is the development of a system of procedures for formal policy evaluation. This would involve exploration of cost-benefit and cost-effectiveness approaches which might be set up on a continuing regular and uniform basis for given regions. Even now the basis exists for more systematic definition and measurement of system inputs and program costs (even approximate) for units of output.

Specifically, first there needs to be a careful specification of goals with the concomitant identification of quantitative and objective performance measures. Second, there should be a specification of a VTE production function. This means that attempts should be made to formalize the relation of system inputs (e.g. teachers and facilities) to program outputs (e.g. trained students, job performance, and placements). Third, standardized measures of costs for programs in terms of outputs must be developed.

Such policy evaluation procedures should also include the provision for regular field studies similar to the ones we have followed here to survey students, employers, teachers, administrators, and equipment and facilities. Our experience in these two studies indicates that the field survey method discloses much information that can never be derived from either a formalized data reporting system or from formal written reports.

6.2. Two Issues in the Scope of the Study

We have discussed the problem of how to define "needs" and suggested that the

Advisory Council consider commissioning research on methodology for more formalized policy evaluation. In this section we discuss two other issues involved in the scope of the project: (1) development of methodology for needs assessment versus actual evaluation and (2) urban versus non-urban needs.

6.2.1. Development of Methodology for Needs Assessments versus Evaluation

To put it bluntly, have we stuck entirely to the "neutral" position of the development of methodology or have we strayed over the line and engaged in evaluation per se of VTE policies and programs? At first blush it would appear that the answer would be that we have strayed over the line and made a number of normative observations and recommendations. However, upon further reflection, most readers will agree that there is no clearcut dividing line between evaluation and the development of methodology for evaluation (needs assessment).

First,we are clearly in the position of having to evaluate methodology which is now being employed. To the extent that we suggest new or different methodology we are making evaluative judgements about present institutional arrangements and practices. To do otherwise would be non-helpful.

Second, we have attempted to study methodology in the context of field applications, first in the Jacksonville area and next in the Tampa-St. Petersburg region, this means inevitably we are dealing with actual programs and people. Field testing means that the development of methodology will involve both evaluation of methodology and the evaluation of programs. We have attempted to suppress the evaluation aspects of individual programs by trying not to identify particular people and places and preserving anonymity whenever possible. Yet, it must be clear that anonymity cannot be preserved whenever we evaluate procedures that are employed at the state level. At this level, there is no clear-cut distinction between evaluation and the development of methodology. It is also at this level that the "advisory"

role of the Council in relation to the Department of Education is most sensitive.

Third, the field surveys of administrators, students, instructors, employers, and facilities can not be done in a "neutral" setting. Field surveys, by their very nature, involve needs shaped and seen in a particular setting. Necessarily, this kind of methodology does lead to evaluation of the system even though the anonymity of individual actors is preserved.

6.2.2. Urban versus Non-urban Needs

There are several sub-issues which are related to the question of urban versus non-urban VTE needs. First is the basic question of what is urban? In a broad sense ours is an urban society. Certainly, it is urban compared to societies which have existed at other times and places. Next, according to the Census "urban places" can comprise areas of 2500 people.

The term "urban area" as used in this study refers to a standard metropolitan statistical area (SMSA) which consists of a central city of at least 50,000 population plus the county and the contiguous counties which are socially and economically integrated with the central city. Florida now has sixteen SMSAs. These contain over 90 percent of the state's population and 95 percent of total work force in the state. Clearly, some of the methodology developed in this study can be applied to school systems located in smaller cities and towns. The most important exception to this point is that labor market forecasting techniques can not be very sophisticated or extensive for very small regions.

Second, what does our methodology, which concentrates on larger urban labor markets, imply for "non-urban" systems? It should be stressed that the SMSA concept does include counties contiguous to large urban areas so that these "rural" VTE programs can and should be analyzed in the same context as the larger urban school systems, for example Baker County near Jacksonville and Pasco County near Tampa-St.

Petersburg. The commuting pattern of workers is clearly crucial to VTE needs assessments in the smaller school systems.

Of course, smaller VTE schools should also be concerned with programs related to mining, forestry, home economics and agribusiness. Our findings have been that the smaller VTE programs have usually overemphasized home economics and agribusiness programs and may not be adequately meeting the needs of their students who will be working in urban occupations.

The other constraint on small VTE programs is that they may be relatively high cost programs, and many students are needed to justify expensive equipment and specialized personnel. In many ways school consolidation at the county level may still encompass too few VTE students to develop diversified and low-cost programs. Transportation of VTE students to larger school systems may be warranted in such circumstances.

Third, are VTE programs to be primarily oriented to the nearest urban labor market? Much of the labor market analysis we have proposed is concentrated upon manpower projections being developed for each SMSA. Does that mean that important national, regional, and state-wide manpower trends should be neglected? Do not young people migrate to other regions?

Of course, national, regional, and state-wide trends are important. And, of course, young people do migrate. However, in the case of Florida there is net in-migration of people in the working age group. Also, it seems to us that there already is an abundance of manpower information for these larger areas. What has been lacking is labor market information tailored to the needs of specific urban areas. In fact, a competent urban economic profile would relate the strengths and weaknesses for employment prospects of the particular urban area to the economic prospects of the nation, region and the state. The forecasting models we propose should be linked to state and national trends.

6.3. Needed Accuracy in Labor Market Projections

In this report we have stressed that local VTE planners, guidance, personnel

and placement officers need more accurate manpower information for their individual labor market areas. We have also emphasized that local VTE personnel receive training in the use of manpower data, and that local employment forecasts be reviewed by local economic experts before being developed in final form. In this section we will discuss how much accuracy is needed in labor market projections for VTE usage.

First, we understand that most VTE planners are mandated to train students for job openings in individual counties. Hence, these officials are looking for job information at the county level. We believe that efficient VTE programs can not be set up with this sort of mandate. Almost invariably job markets involve commuting to areas which cross county lines. Next, efficient VTE training programs that can utilize economies of scale and specialized programs often need to be multi-county based. Finally, we do not think that counties per se often constitute suitable geographic areas for labor market projection purposes. In fact, both the paucity of data and the state of the art for making manpower projections preclude the making of individual county projections when the labor market transcends county boundaries.

Thus some of the emphasis "demanding" more accuracy in local manpower projections may be misplaced because it is based upon mandates that may require taking into consideration only county-wide consequences. The geographical mismatch between VTE boundaries and urban labor market needs is a serious problem.

Second, the value of accurate projections of urban area manpower needs over a three to five year period will depend upon the VTE programs themselves. Manpower data needed for post secondary programs may differ from that needed for secondary programs. Moreover, VTE programs may be job-preparatory or pre-job-preparatory. Clearly, many programs at the secondary level are pre-job-preparatory

and the manpower outlook may need to be less area specific and perhaps may need to be less precise about short-run horizons. By contrast, some specialized VTE programs may be set up on a very short notice to meet a pressing need that has been just identified. For example, the shipyard operations in Jacksonville or Tampa may experience a sudden demand for marine welders that would justify setting up a new program or expanding an existing program to supply trained welders on short notice. Usually, specialized programs that are clearly job preparatory and which involve the use of expensive equipment, facilities, and specialized instructors will require more accurate projections and more lead time.

Third, if the response capability of a VTE system to changing labor market trends is very slow or sluggish, more accurate forecasts may not be warranted if the expense of gaining more accurate forecasts is high. What seems to be required is a balancing of funds spend for more accurate and speedy labor market projections with funds spent to make some VTE programs more capable of rapid response. Naturally, these considerations will apply with greater force to some VTE programs than to others.

Also, the labor market itself may be undergoing rapid change or it may be relatively stagnant. If the labor market is a very dynamic one, the difficulty of making accurate short run forecasts may increase. Yet, the value of forecasts may also rise. In such cases it may be wise to increase forecast accuracy by reducing the time interval between forecasts and supplying more frequent up-dates.

Fourth, VTE officials need to be sensitive to the other sources of the potential supply of manpower for specific occupations or jobs. As a generalization, if the VTE program provides only a small portion of the supply of workers for a given category of jobs in a given urban area, the value of accurate sensitive job forecasts may be lessened. It may well be that the outlook for placement of particular VTE graduates may be relatively stable even though the job outlook for this

occupation may be fluctuating. However, this fact would need to be related to placement experience and also to the costs of running the particular VTE program in question. By contrast, if other sources of supply are sluggish or small, the value of accurate manpower projections increases for VTE programs.

Finally, the needed accuracy of formalized manpower projections is related to the closeness of the interface between the actors in the job market and the participants in the VTE delivery system. If the interface is well-developed at all levels there will necessarily be a constant and steady exchange of job information between all of the participants and actors. This information will often be more specific or specialized (and probably more accurate) than can ever be gained by formal projection procedures. In some ways the interface activity can function as an "early warning" system that can strengthen formal forecasts by providing needed feedback. In other ways, an active early warning system, even though it is less formalized, may reduce pressures for more speedy, accurate forecasts--particularly in the periods between development of formal forecasts.

Each of the five factors mentioned above illustrates that increased accuracy of manpower forecasts for urban areas is a commendable goal, but that the search for accuracy is not absolute. It must be related to costs and to benefits just as policy evaluation and cost effectiveness analysis is important for other aspects of VTE programs.

### 6.4. The Interface Between the Labor Market and the VTE Delivery System

One of the recommendations for improving methodology for needs assessment that came from the Phase One report was the idea of a regional workshop to bring business leaders and VTE program directors together. We recommended that workshops be held on a regular basis between VTE officials and business and industry within a given labor market area to improve needs assessments per se and to develop more channels of communication.

As we described in Chapter 5, a workshop for the Jacksonville labor market was held June, 7, 1977. We judged the workshop as only a partial success. For one thing, the conference was only sparsely attended by employers who numbered only four out of eleven local participants (in addition to the study team and observers from Tallahassee). Moreover, the sample of employers was clearly biased by the presence of several large employers who already have reasonably good contacts with the VTE system. Public employers and many of the smaller firms who presumably could profit from closer communication with the VTE system were not represented.

Also, it was recognized at the workshop that the role of labor unions in the operation of local labor markets affecting VTE graduates is a major one. Yet, union representation was not present. It was acknowledged that the literature on needs assessment has generally failed to study the role of labor unions and how they affect the operation of cooperative training programs and the placement of VTE graduates.

It now seems fair to observe that we expected too much from the regional workshop. The objectives remain very important. In fact, improvement in the entire interface of the VTE system with the local labor market is one of the major recommendations of our study. The regional workshop, in this case, was really one set up by outsiders and not a workshop set up by local people with a stake in the region. In addition, it seems possible that the local people viewed the workshop as an extra meeting to attend rather than perceiving the meeting as a way to better assess needs and to improve communication between employers and the VTE system.

Finally, workshops tend to be viewed as "one time" affairs even though they may be set up on a regular basis. What seems to be needed are a whole set of devices to improve the interaction between the VTE delivery system and employers. These devices have to be viewed as in the self-interest of all concerned; they have to be viewed as means to reduce costs of searching on the part of employers

and job trainees and as a means to increase the "success rate" of VTE training. The need for more and better channels of communication must be perceived by the participants themselves. It is very difficult to mandate "needs" from above although every effort to remove roadblocks to communication channels should be explored at all levels of administration.

Perhaps the first place to start is at the level of the craft advisory committee. In a few places craft committees are active and seem to be functioning well. In many areas, craft committees are largely proforma groups who seldom meetand who seem to be non-functional.

Probably, the next place to start is to reexamine the role and operation of regional coordinating councils with a view to improving channels of communication between employers, labor market analysts and VTE administrators. The results of our field work suggest that the coordinating councils view their primary function as one of ameliorating conflict between the various parts of the VTE delivery system, e.g. high schools versus vo-tech institutes versus community colleges.

This role is an important one given the present multi-headed structure for administration of VTE programs. However, we recommend that consideration be given to streamlining the administration of the VTE system at the top of the structure so that the coordinating councils can be increasingly concerned with improving the interface between the VTE system and the labor market itself. This interface is clearly one that is regional in scope, and it can not be done either in Tallahassee or in Washington D.C.

As of now we do not see that a regional approach to the "interface" problem is perceived as a need nor do we see the function being performed by any part of the current structure. As of now the major worry at the regional level is how to coordinate (really to rationalize) a set of partially competing school systems into a regional VTE delivery system. In fact, we believe that the present structure

for VTE statewidedoes a great deal to create competition instead of promoting cooperation. If the present VTE system at the state level is not streamlined then we may have to rely on coordinating councils to continue to perform their present role. If this is the case, then there needs to be explicit attention to the establishment of other devices to perform the regional interface function so essential to urban areas.

We need to recognize here that presently the coordinating councils cover areas defined by community college districts. For the most part, these districts bear little resemblence to the relevant labor market areas. Until there is a closer alignment between the geographical areas covered by coordinating councils and labor markets, it is not likely that the councils will be successful in coordinating a regional VTE delivery system or in performing the regional interface function.

A third step in improving the interface between the labor market and the VTE system is the establishment of a review function for the VTE labor market forecasts developed for each urban area. As we understand the situation local VTE planners receive formal labor market information from the BLS, from the Florida Department of Commerce, and from the Florida Department of Education. To a local VTE person these various sources of information appear overlapping and often contradictory. In most cases, the labor market information is not specially tailored for the local urban labor market. We have recommended the establishment of OIDS forecasting models for each Florida SMSA. In addition, these labor market forecasts are not reviewed by local forecasting and employment experts to check the forecasts for reasonableness and for the inclusion of specialized local information not available in Tallahassee or in Washington, D.C.

We believe that local expert, independent review is essential to improve the accuracy of local manpower forecasts and to enhance their credibility. There are

a number of ways to accomplish expert and independent review of manpower forecasts for VTE at the regional level once the need is recognized. Since CETA programs also require manpower forecasts, it might be desirable to establish an annual manpower outlook conference for each urban area as the device to publicly review manpower forecasts. By contrast, the review could take place on a less formal and more private basis depending upon the wishes of all concerned. Our preference would be for more formalized procedures at least for the larger urban areas where there already exists lots of expertise in local economic forecasting.

A fourth step, that should follow the third step, is to set up formal training workshops in each urban areas for various VTE personnel in how to understand and better use the "authenticated" manpower forecasts and general manpower data. Better and more accurate manpower data will be of little value unless VTE planners, guidance counselors, placement officials and others understand how to use the data. We have identified the need to train local officials in the use of manpower data as a serious one. Each time new forecasts are received training workshops should be conducted. Our field work has established that VTE administrators do not fully understand the projections. Moreover, we find that guidance counselors and placement people are not making full use of data now available. Out of these workshops will probably come suggestions from various users on how to improve data, format, and content to better meet individual needs.

A fifth suggestion for improving the labor market interface is to coordinate or rationalize the groups which produce and/or distribute labor market information for urban areas. In several places in this report we have commented upon the competition that exists between the various parts of the VTE delivery system. It is apparent that somewhat similar competition exists between agencies producing and distributing labor market information. Each agency tends "to protect its own turf"; each agency uses its own procedures and projections. Currently, for

most urban areas labor market information is available from at least four sources: The Florida Department of Commerce, The Florida State Employment Service (FSES), CETA, and from the OIDS System. It is not surprising that VTE officials are often confused by the receipt of manpower data (which lacks comparability) from multiple sources.

Serious consideration should be given to dealing with this problem. As we see it, each agency possesses some comparative advantages in certain tasks. If each would specialize more in the things it can do best the total situation in regard to the production, the dissemination, and the use of labor market data for VTE purposes could be substantially improved. For example, it appears that OIDS can provide relatively sophisticated projections of occupational manpower needs for labor market areas. By contrast, the FSES provides perhaps the best interaction between employers and the unemployed workers. It would seem that both FSES and CETA could provide substantial input on the needs of private and public employers and thus serve as labor market "facilitators" for large groups of firms or employers.

Here we have suggested five ways to improve the interface between the operation of the local labor market and the VTE delivery system. The interface needs to deal with five segments: employers, unions, workers, the VTE system, and producers of labor market information. Undoubtedly, there are other steps and strategies to pursue. The problem now is to recognize and define the "interface" problem and then try to deal with it.

## 6.5. Conclusions

### 6.5.1. Comparison with Earlier Findings

Readers of the Phase One report will recall that we had conclusions in seven areas:

(1) Uses of Manpower Information in VTE Planning. We pointed out that manpower information is characterized by a sloppy use of labor market

concepts and that manpower information is often used to justify pre-selected programs. Our field work in the Phase Two revealed similar patterns of misuse and abuse of manpower information. These patterns are consistent with findings at the national level reviewed in the Phase One report.

(2) A Preferred Methodology for Projecting the Expansion Demand for Labor. We recommended the econometric technique as being preferred over time-trend and shift-share techniques. In the Phase Two study we employed both the econometric and shift-share techniques. Again both yielded reasonable results. However, we noted that the BLS/OIDS procedures provided very similar forecasts. As a practical matter we suggest the use of OIDS. It provides reasonably accurate and reliable forecasts. Yet, we believe that undue concentration on the need for increased accuracy for projection of the expansion demand for labor may not be warranted until better techniques are developed to forecast replacement demands.

(3) Calculation of Replacement Demand. Again, we have used BLS procedures for the calculation of replacement demands because there exists no reasonable alternative. These procedures clearly contain distortions. We used state coefficients at the local levels, and we used separation rates that are not occupation-specific. We estimate replacement demands to equal 50% of the total demand for labor in Florida so that the margin of error in estimation of replacement demands can offset improvements in the accuracy for forecasting expansion demands.

(4) Forecasting the Supply of Labor by Occupations. In the Phase One report we used an experimental shift-share technique to forecast the supply of labor by occupations. We recognized the limitation of the technique

(deemed promising) and requested further refinement and testing. After further testing of the technique we now believe that we were too optimistic. With the data available it appears that this technique can not be employed to estimate occupational supplies. We are still forced to use national occupation demand projections to forecast local occupational supplies. Systematic occupational supply projections at the national level do not exist.

In Chapter 4 we have still used this shift-share procedure as an alternative way to project employment. We have been forced to face up to the fact that estimation of occupational supplies of labor for urban labor markets can only be done in the most general terms short of expensive, detailed census surveys.

(5) Meshing of Supply and Demand Forecasts. In Phase One we stressed that our techniques for forecasting the demand for labor are based upon the "requirements" approach. In this report we believe it more correct to say that our projections are not either (in technical economic terms) forecasts of demand or supply. Instead, our techniques tend to forecast employment which represents outcomes of demand and supply forces. Yet, it is clear that these projections of employment can be very useful to VTE planners in looking at the outlook for employment of VTE graduates in the future.

(6) The Crosswalking from Occupational Projections to VTE Programs. In this report we provide a table in which our forecasts of occupational employment are related to VTE program codes. The table also projects total VTE graduates over the forecasting horizon. To our knowledge these two reports (one for the Jacksonville area and the other for the Tampa Bay area) present for the first time employment projections by

occupation have been related to VTE program outputs in a comprehensive and systematic fashion.

(7) Conclusions Drawn from the Fieldwork. Much of the field work in the Phase Two study supported conclusions reached in the earlier study. Specifically, in the Tampa Bay area, VTE programs are characterized by uneveness in quality and diversity. Uneveness exists in facilities, expenditures, class size, equipment and staffing patterns. However, in contrast with the Phase One study we did not find a systematic inverse relationship showing that small districts always have higher costs per pupil. From the cost data available (which is highly imperfect), we now believe that it is very difficult for anyone to conclude with certainty how program costs per student vary within districts and across districts. In fact, we now call for a complete and systematic analysis of program costs.

Both studies have turned up widespread allegations of "skimming" of VTE funds for other purposes and of the "dumping" of problem students into VTE classes. The charges appear serious on both counts and we believe that they deserve further study.

In addition, our field work studies show that there are still problems of sexism and heavy concentrations of students in agribusiness and home economics programs beyond what appears warranted by employment prospects. Moreover, evidence suggests that the exploratory and pre-job preparatory programs are not designed to explore whole ranges of new occupations. They still appear to be dominated by career patterns and VTE programs of past decades.

Next, field studies in both areas brought to light the considerable degree of competition for "turf" by the various components in the VTE delivery system. In fact, we probably are over generous in characterizing the present collection of VTE programs in a given urban region as a "system".

Our attempts to study the problems of handicapped students and the disadvantaged were inconclusive both because the programs themselves are not highly visible and because our fieldwork budget was already over extended. Nor, were we able to evaluate the effectiveness of bilingual programs because the programs were not widespread. However, there is some evidence that suggests the commitment to bilingual programs in the Tampa Bay region is weak. In addition, the data available on these programs is very limited.

Our interviews with VTE faculty in both the Jacksonville and Tampa Bay Regions indicate that there are problems of low faculty morale because of low pay and alledged poor working conditions. We also found that faculty were concerned about the problem of disruption and low incentives to learn from the apparent "dumping" of problem students into VTE programs. These matters of faculty morale warrant further study.

Finally, our review of the placement and student follow-up records indicates they are subject to some serious statistical questions, so that few firm conclusions can be drawn from the data we have examined. We recommend changes in the sampling procedures in the future. In fact, there appears need for a complete overhaul of the management information system regarding program costs, outputs and placement experience within and across all regions. The system is awkward, slow, and expensive.

6.6. Major Recommendations from the Two Studies

1. Needs assessment methodology needs to be formalized and restructured. It should be an on-going procedure carried out on an annual basis. Now it is presently open-ended with respect to needs; it is ad hoc in nature so that comparability within and across regions is not achieved. Development of formal program evaluation including cost-benefit and cost-effectiveness analysis should be initiated.
2. The organization of the VTE system is overly complex and bureaucractic. Consideration needs to be given to streamlining the system and to

redefinition of territorial and program responsibilities. For example, relations between the community college VTE programs, the Voc-Tech schools and the high schools are overlapping and complex. Even within the community college system VTE directors have two bosses. Also, coordinating councils need to be given territorial responsibility over labor market areas and not confined to community college districts.

3. The interface between the VTE delivery system and the local labor market needs to be improved. The exchange of labor market information between employers, unions, VTE personnel, students and public manpower agencies should be facilitated. A wide series of steps should be investigated. We have suggested strengthening craft advisory committees and the placing of business representatives on coordinating councils. Ways need to be found to involve union representatives. Better use of the Florida State Employment Service and CETA personnel appears desirable. The roles of The Florida Department of Commerce, OIDS, CETA and FSES need to be reassessed. The ties between CETA programs and the VTE System are weak and in some cases the two systems work at crosspurposes. Federal and state officials should consider changes in the legislation and administration of the two manpower training programs.

We believe that the Florida State Employment Service in each SMSA should spend less time generating local labor market information (leave this task to OIDS) and instead, it should concern itself with improving the operation of local labor markets and reducing the search costs of employers and job applicants.

4. The Bureau of Labor Statistics should be urged to develop better techniques for the estimation of replacement demands. In addition, BLS should devote research monies for the better estimation of labor supply by occupation.

5. The OIDS system should be extended to each SMSA. Less emphasis should be placed upon planning regions. Efforts to apply the OIDS system to individual counties should be abandoned. Instead, emphasis should be placed upon producing information for functional labor market areas.
6. Our methodology for providing labor market forecasts by occupation with the crosswalk to VTE program codes appears to be viable. We believe that it should be extended to all Florida SMSA starting with larger areas first. However, the next advances in needs assessments should come in the development of formal policy evaluation procedures and the establishment of an improved management information system. Conflicts in VTE educational philosophy need resolution, however, so that program goals can be clarified and presented in clear cut fashion. This needs to be done in order to clarify cost and output variables to be used in the establishment of the management information system and in the development of cost effectiveness techniques.
7. Improvements are needed in the management information system. First, more accurate cost data must be developed. Presently it is impossible to compare program costs across districts or to fully guage program costs within a district. Second, the placement follow-up questions should be improved statistically. More scientific sampling can be implemented. Third, the response time of the system is slow, and the system is cumbersome.

## Appendix A

Materials on Workshop
on Business-Industry Needs and
Vocational Education in the Jacksonville
Labor Market Area, June 7, 1977

a. Background paper sent to each of the participants

b. Workshop agenda

c. List of workshop participants

d. Written statements from participants

# Workshop on Business-Industry Needs and Vocational Technical Education in the Jacksonville Labor Market Area

## I. Purpose of the workshop:

The demands for and supplies of trained labor in the Jacksonville area is a common concern to both the business community and to vocational and technical educators. The workshop's goals are (1) to improve the assessment of the needs of both groups and (2) to increase communication through a joint meeting.

## II. Format of the workshop:

A half-day meeting comprising about ten individuals from the business community and ten vocational and technical educators is envisioned. There will be no formal speeches. After some brief introductory remarks by Fishkind and Milliman, we will introduce all participants to each other. The basic strategy is to have each business official describe briefly and concretely how he thinks business needs can be better met by vocational and technical education programs in the Jacksonville labor market. The educational officials will each be asked to state concisely what he believes the business community can do to strengthen vocational and technical education programs. Each participant will be asked to submit a one to two page statement summarizing his views.

## III. Results of the workshop:

We will compile and organize the statements of all workshop participants and make them available to the group. An assessment of the results of the workshop will be in the final project report to the Advisory Council on Vocational and Technical Education concerning our research on methodology for determining the needs for vocational and technical education in urban areas in Florida.

## IV. Background statement:

The Florida State Advisory Council on Vocational and Technical Education has commissioned the Bureau of Economic and Business Research at the University of Florida (Gainesville) to develop methodology for assessing the needs for vocational and technical education, VTE, in urban areas in Florida. Previously most studies of VTE needs have utilized state and national data. They have not adequately related the needs of business and industry, VTE programs and students to each other in a local labor market context.

Clearly, there is great need for improvement of local manpower data in terms of accuracy, format, and interpretation. VTE officials are conscious of the need for systematic program monitoring and evaluation. Business groups need a supply of well-trained labor to meet changing economic conditions. Both groups can profit by better local manpower information; both groups can profit by developing more channels of communication. We believe that workshops held on a regular basis between VTE officials and business and industry within a local labor market area will improve the assessment of needs for VTE programs and improve the assessment of needs for VTE programs and improve the development and dissemination of local manpower data.

H. H. Fishkind
J. W. Milliman
Bureau of Economic and Business Research
University of Florida
Gainesville, Florida 32611
May, 1977

Preliminary Agenda for the Workshop on
Business-Industry Needs and Vocational
Education in the Jacksonville Labor Market

Date: Tuesday, June 7, 1977, 9:00-12:00
Place: Howard Johnson's Motor Lodge, I-95 N and Golfair

| | |
|---|---|
| 9:00-9:30 | Registration, coffee, and danish. |
| 9:30-9:45 | Introductions - Jerome Milliman<br>Overview of workshop - Hank Fishkind<br>Response - Frank Peterson |
| 9:45-11:00 | Participants' views on business-industry needs and vocational education in the Jacksonville labor market. |

a) Each business leader will have approximately five minutes to describe how he thinks business needs can be better met by local vocational and technical education programs.

b) Each vocational education official will also have approximately five minutes to discuss what the business community can do to strengthen vocational education programs.

c) Business leaders and educators will alternate in their talks.

| | |
|---|---|
| 11:00-11:15 | Coffee break. |
| 11:15-12:00 | Round table discussion of business needs and vocational education in the Jacksonville labor market. |
| 12:00 | Adjourn. |

Participants in the
Workshop on Business-Industry Needs and
Vocational Education in the Jacksonville Labor Market Area
June 7, 1977

1. Mr. Gene Campbell, Personnel Manager, Southern Bell
2. Mr. Gerald Clements, Labor Market Analyst, Jacksonville, Florida
3. Mr. Alan Harvey, VTE Coordinator, Baker County
4. Dr. Eric Mills, Occupational Dean, Florida Junior College
5. Mr. Henry Morgan, Training Director, Jacksonville Shipyard
6. Mr. Frank Peterson, President, Diversified Products Manufacturing
7. Mr. David Rigsby, VTE Coordinator, Duval County
8. Ms. Norma Strickland, Labor Market Specialist, State Department of Education
9. Mr. Jud Wilhelm, Facilitator, St. Johns River District Coordinating Council
10. Mrs. Arnold Wolverton, Training Supervisor, SCM Corporation
11. Mr. Ralph Upton, Executive Director, St. Johns River District Coordinating Council

GLIDDEN-DURKEE
DIVISION OF SCM CORPORATION
FORM 136 PRINTED IN U.S.A. 4/71

FROM Arnold Woolverton DATE June 3, 1977 FOR Mr. H. H. Fishkind

CITY Jacksonville, Florida

ANSWERING LETTER OF

SUBJECT REPORT FOR THE WORKSHOP ON BUSINESS INDUSTRY NEEDS AND VOCATIONAL TECHNICAL EDUCATION IN THE JACKSONVILLE LABOR MARKET AREA

For several days, I have been discussing the educational needs of the Organic Chemicals Division of SCM (formerly Glidden-Durkee) with individuals in the management of the research laboratory, the engineering department, and the plant. Mr. Young, our president, has discussed the matter with me. He regrets that he has to be out of town at the time of this workshop.

The general consensus of opinion seems to be that Jacksonville educational institutions are offering an increasingly broad range of vocational and technical training. I understand that there are new vocational-technical high schools being completed at the present time. Florida Junior College offers numerous courses that meet our needs.

The University of North Florida even offers a degree in industrial technology. Our company has many employees enrolled in these various programs under our tuition refund plan. We would like to motivate more to enroll in the elementary vocational-technical courses, and are seeking to do.

For several years, one of our engineers, James Sewell, has served on the advisory board at the Florida Junior College. They have been most cooperative. Dr. Carpenter and Dr. Darm at the University of North Florida have been extremely helpful. They have requested information as to our needs; they have assisted us in obtaining extension courses; they have aided us in motivating our employees to enroll in the Industrial Technology program.

Therefore, we feel much encouraged about the state of vocational-technical training in Jacksonville. Phillip Chatham, Director of Manufacturing, did point out that our needs change rapidly and, in the future, we may find areas of study that are not covered in Jacksonville. At the present time, we are very pleased.

The one area in which we could use assistance in the form of seminars, short courses or full-length courses, is chemical operator training. It would be helpful to have knowledge of various methods of operator training and the ways and means connected with them.

In addition, our company strongly desires technological courses in the Jacksonville area. I am enclosing two lists of these, one from our engineering department, and one from our research laboratory. We feel that there are other companies and agencies whose need for these courses is as pressing as ours.

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Arnold R. Woolverton
Training Supervisor, Organic Chemicals
Jacksonville, Fla.

ENGINEERING DEPARTMENT

1. Chemical Engineering Fundamentals Refresher

2. Applied Problem Solving

3. Basic Accounting as applied to

   Chemical Engineering, eg. Discounted Cash Flow, Return on Investment, Return on Net Assets

4. Kinetics & Reactor Design

5. Cost Estimating

Enter Courses : 400 AND 600 LEVEL CHEMISTRY COURSES
(LABORATORY AND SPECIAL TOPICS COURSES EXCLUDED)

PREFERENCE (IN ORDER):

1. A
2. B
3. C



B

CY 631—Chemical Thermodynamics (3) Energetics, properties of ideal and nonideal gases from the standpoint of classical thermodynamics.

CY 632—Kinetic Theory (3) *Prereq:* CY 641. Classical statistics, the Maxwell-Boltzmann distribution, molecular collision dynamics, elements of transport theory, virial theorem, intermolecular forces.

CY 641—Statistical Thermodynamics (3) *Prereq:* CY 642. Fundamental principles of statistical thermodynamics with applications to systems of chemical interest.

CY 648—Advanced Chemical Kinetics (3) *Prereq:* CY 668 or equivalent. Rates and mechanisms of chemical reactions.

CY 655—Introduction to Molecular Spectroscopy (3) *Prereq:* CY 642. Molecular energy levels, spectroscopic selection rules, rotational, vibrational, electronic and magnetic resonance spectra of diatomic and polyatomic molecules.

CY 675—Quantum Theory of Matter I (3) Same as PS 675. *Prereq:* CY 668 or PS 655. Quantum mechanics of atoms. Hartree-Fock theory. Interaction of radiation and matter, scattering theory.

CY 676—Quantum Theory of Matter II (3) Same as PS 676. *Prereq:* CY 675. Theory of molecules and polyatomic systems. Applications of symmetry and group theory.

CY 678—Quantum Theory of Matter III (3) Same as PS 678. *Prereq:* CY 676. Special topics in the quantum theory of matter, solids, liquids, and plasmas.

CY 685—Special Topics in Physical Chemistry (1-3) Lectures or conferences on various selected topics of current interest in physical chemistry.

CY 695—The Physical Chemistry of DNA (3) *Prereq:* CY 282, 454, 492, and consent of instructor. Physical chemistry of nucleic acids. Role of nucleic acids in genetic phenomena. Experimental techniques.

A

CY 653—



A6

THE ST. JOHNS RIVER JUNIOR COLLEGE
DISTRICT COORDINATING COUNCIL
Clay, Putnam & St. Johns Counties Cooperating
5001 St. Johns Ave.
Palatka, Fla. 32077

May 27, 1977

Dr. Henry H. Fishkind
221 Matherly Hall
College of Business Administration
University of Florida
Gainesville, FL 32616

Dear Dr. Fishkind:

Attached you will find a copy of the comments you requested summarizing my views on how vocational education programs can be strengthened by the business community.

I am looking forward to the workshop and also having the opportunity of meeting you.

Sincerely,

Jud Wilhelm

Jud Wilhelm
Facilitator

JW/rh

Enclosure

RECEIVED
MAY 31 1977
BUREAU OF ECONOMIC
AND BUSINESS RESEARCH
University of Florida



A7189

The first priority of any educational system is to provide meaningful, valid educational opportunities to its students in order for them to become a benefit to society in whatever endeavor they pursue.

In order to accomplish the task at hand, it is of the utmost importance for those in education to keep up not only with the latest in educational trends, methods, equipment, facilities, etc. but to keep abreast with the needs of the community.

To focus on Vocational-Technical Education, the key to success is the opening of lines of communication and the keeping of those lines open between educators and business. The use of direct, as well as indirect contact, on both a formal and informal basis is a must. Advisory groups, craft-committees, etc., provides the basis for this contact and the resulting ability to expand contacts.

On the other hand, individuals, groups, etc., in the business community must cooperate in giving input both when called upon as well as on their own ititiative. Data of varying types is necessary to provide successful programs, but data is only as good as the effort at all levels put into collection, compiling and interpreting. This is where the business community can be of a great deal of help.

In summary let me say that human nature often makes it easier to blame someone else. When we consider the importance of the job at hand, we do not have the right to do anything but work together for the good of our students, for they are our future. We must strive to communicate and cooperate to the utmost in order to achieve what I feel is our highest goal, the successful transition of our students into society.

Southern Bell

Gene W. Campbell
Division Personnel Manager

145 Jacobs Building
Post Office Box 390
Jacksonville, Florida 32202
Phone (904) 353-2677

June 6, 1977

SUMMARIZATION OF VIEWS

VTE- All students whether college bound or not would value from some-
(1) Summer jobs to pay way through school.
(2) Help in determining career interests.
(3) First hand knowledge and experience in field of work.

Many businesses promote from within and once a person is on the job results and potential are the upward mobility deciding factors more than level of formal education.

Many students, either by environment or by academic ability, have no desire to be put in a position of management responsibility and therefore will need marketable skills.

LABOR NEEDS- Should be read as far ahead as possible in order to have adequate trained labor ready for work as needed.

INDUSTRY- Usually larger businesses require only the ability to learn and perform. In-house training prepares new employees for job skills required.

However, could utilize persons with background skills. ie, basic electricity, electronics, drafting, woodworking, etc.

SMALL BUSINESS- With no formal training programs would require a higher skill level.

TECHNICAL- Would require skills above apprentice level. Plumbing, carpentry, welding, brick laying, etc.

CLERICAL- Bookkeeping-Machine-Data-Skills need to be at the production point.

Southern Bell

**Gene W. Campbell**
Division Personnel Manager

145 Jacobs Building
Post Office Box 390
Jacksonville, Florida 32202
Phone (904) 353-2677

| | | |
|---|---|---|
| 1. | IDENTIFICATION- | Identify skills needed over next 10 years broken down by year, skill, industry, etc.<br>a. New skills needed.<br>b. Change in skills needed.<br>c. Obsolete skills. |
| 2. | SOURCE- | Determine where business and industry intend to acquire the people needed.<br>a. From existing work force, ie, retrain non-skilled for skilled.<br>b. New hires for non-skilled back fill.<br>c. New hires for skilled personnel.<br>d. Retrain employees whose skills have become obsolete. |
| 3. | PROVIDE TRAINING- | For new skills.<br>For old skills. |
| 4. | PROVIDE RETRAINING- | For obsolete skilled.<br>For underutilized. |
| 5. | TEST- | To determine qualifications level. |
| 6. | INTERVIEW- | To determine desires and career goals. |
| 7. | COUNSEL- | To help adjustment and career planning. |
| 8. | REFER- | Trained students to market for their skills. |
| 9. | FOLLOW-UP | To determine level of efficiency and training vs. actual work conditions gap. |
| 10. | TRUE UP | Adjust training to compensate for inadequacies identified. |

RESPONSIBILITY-SCHOOLS-BUSINESS

SCHOOLS- Must train "Whole Person" don't concentrate on skills only. Must emphasize responsibility to attendance, punctuality, conduct/behavior, production, acceptance of supervision, etc.

Must be willing and able to adjust training program to fit changing needs of business and industry.

Southern Bell

**Gene W. Campbell**
Division Personnel Manager

145 Jacobs Building
Post Office Box 390
Jacksonville, Florida 32202
Phone (904) 353-2677

Must maintain qualified instructors.

Must accept input from industry advisory boards and adapt to their requests and suggestions.

Don't forget basic education, reading, spelling, arithmetic, language, etc.

BUSINESS-

Must be honest with schools on numbers and skills needed.

Must accept training given and give credit for it, ie, wage experience.

Must not duplicate training.

Must provide feedback to schools.

Must keep schools abreast of changes in operations.

Mr. G. W. Campbell
Division Personnel Manager

Alan Harvey

I. Business can do to strengthen vocational education programs?

1. Helping our schools placement followup specialist place our vocational graduating students in jobs.

2. Employ our cooperative work students in part-time jobs while still in school.

3. Followup surveys (mentioned under comments) how we may improve our vocational programs.

4. Someway business and industry or the district school boards needs accurate information on the job market (how many jobs are available and in what)?

5. Have meetings or workshops between the school and the business community how we may help each other.

STATE OF FLORIDA DEPARTMENT OF COMMERCE
Division of Employment Security
215 Market Street
Area Office - Room 300
Jacksonville, Florida 32202

RECEIVED
JUN 20 1977
BUREAU OF ECONOMIC AND BUSINESS RESEARCH
University of Florida

June 17, 1977

Dr. Henry Fishkind
Bureau of Economic and Business Research
221 Matherly Hall
University of Florida
Gainesville, Florida 32611

Dear Dr. Fishkind:

I have thought over the recent workshop and looked through your report "Methodology for Determining Needs for Vocational and Technical Education in Urban Areas in Florida." It appears that forecasting demand for such education is a very complex process. I have become impressed by some of the attitudes of business and labor that make the job difficult.

The remarks of the Southern Bell official revealed a paternalism on the part of his company. He seemed to say that Southern Bell hires people at various entry levels and advances them as their ability warrants, and that his firm has little need of VTE. Somebody else mentioned the absence of labor union officials. Labor unions seem to pride themselves on their self-sufficiency and may even become belligerent if they think company management and government are meddling in their affairs.

Industry must do ever increasing amounts of paperwork for government and give up ever larger amounts of income to government. Thus industry might be reluctant to take part in various voluntary efforts which gather data for government.

Government does not exercise tight control over the country's economy although the trend seems to be toward more control. Therefore, business cycles will continue to occur. It is impossible to take into account future business cycles when making forecasts of job demand.

The smaller the area is the bigger is the risk in making such forecasts. Projections could be make for each urban area, or statewide projections could be made and each educational unit could be assigned training tasks designed to satisfy some part of the projected demand. But your report "Methodology....Florida" seems to indicate that you are committed to making urban-area rather than statewide projections. Is this true or not?

In spite of the formidable difficulties involved in making such projections, an educated guess is better than an uneducated one or no data at all. I believe that if only a considerable percentage of VTE-trained people find training-related jobs, the forecasting and training effort will be worthwhile.

Sincerely,

Clyde O. Smith, Jr., Metro Area Manager

Gerald Clements

By: Gerald Clements, Labor Market Analyst

COS/GC/jea

ALPH D. TURLINGTON
COMMISSIONER

# STATE OF FLORIDA
# DEPARTMENT OF EDUCATION

TALLAHASSEE 32304

June 13, 1977

Dr. Henry Fishkind
Assistant Professor
University of Florida
College of Business Administration
Bureau of Economic and Business Research
221 Matherly Hall
Gainesville, Florida 32611

Dear Hank:

Thank you for your letter of June 8, 1977.

I thoroughly enjoyed the meeting in Jacksonville and feel that it was very helpful to me. I reviewed your study and can certainly appreciate all of the effort that went into it.

My comments on vocational education and business industry needs are enclosed. I hope they will be of some help.

We are very much interested in what you are doing, and I hope that you will keep in touch during the next phase of your study.

Sincerely,

Norma

Norma T. Strickland
Manpower Information Specialist

NTS/jh

cc: Mr. R. Dugger
Mr. R. Schmalfuss

RECEIVED
JUN 14 1977

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VOCATIONAL EDUCATION

The Division of Vocational Education is now, through the Occupational Information and Delivery System (OIDS) furnishing labor demand data to the districts and community colleges. The data are prepared by the Florida Department of Commerce using the methodology described in Tomorrow's Manpower Needs. We are now breaking our projections down into the ten Department of Administration Planning Regions. We are gradually getting our supply data together from the public and private institutions and are planning to supplement them with information on the occupations of the unemployed obtained through a project with the Department of Commerce. (This is now a pilot project for the Tampa-St. Petersburg and Jacksonville areas only.) Working with our planning and program directors, we have modified the crosswalk in Supplement III of Tomorrow's Manpower Needs to Florida's program structure. By talking with local administrators and by arranging to have persons knowledgeable in the area of manpower data at some of our meetings and conferences, we are attempting to improve understanding of labor market concepts. We feel that we've come a long way. We still have a long way to go.

Because of the lead time needed for facility planning and also because our State Plan is for a five-year period, we believe that a five-year projection best meets our needs. We recommend that other data on population, industry employment, job openings, wages, etc., be used for indicators of current labor market conditions.

In my opinion the most difficult problem to overcome in the utilization of labor market data is the discrepancy between labor market areas and administrative areas. District directors want data on their particular county, and understandably so. However, as we know, the projections lose their validity if disaggregated to that level for most counties. We are considering disaggregating the data into the 28 planning regions. This cannot be considered the best labor market data, however, when, for example, the Tampa-St. Petersburg SMSA is split into three different planning regions. I have found that most of the district directors and occupational deans with whom I have talked are very conscious of the influence of commuting patterns and feel very strongly that they should either be training the residents of their area or the people to be employed in their area or, more likely, both. My personal feeling is that we should furnish the best data available and that these other considerations should be addressed at the conference table.

It is my understanding that the Division is no longer funding local surveys of the "skill survey" type. The Department of Labor strongly recommends against them, as you know. At best they are highly subjective and can be grossly inaccurate. In my opinion surveys should be done primarily for specific occupations where the OES titles are too broad or where changes in technology or staffing patterns dictate the need for more information. Input from business

and industry at the local level is vital for program planning and as an indicator of how well our projections and planning efforts have served us over time.

In listening to Dave Rigsby and Eric Mills' disagreement over whether we should be concentrating on labor market needs or the needs of students, I found myself agreeing with both. However, since our resources are limited and because of the language in PL 94-482, I have to lean toward labor market needs. Hopefully, counseling on occupational demand will divert some students into job skill areas where they are more likely to be successful. In Florida our rapidly growing labor market has historically provided us with far more latitutde in planning than is true for most states. Our data can now show us where there is the strongest need for workers. I also think that increased wage-earning capacity is a factor which merits a great deal of consideration in vocational education planning.

Appendix B
Outline of Needs Assessment Methodology

The assessment methodology developed in this study can be conceptually separated into two components: a) labor market analysis and b) analysis of the VTE delivery system. Below we briefly outline each of these beginning with the labor market analysis.

I. Labor Market Analysis

A. Formulate an economic profile of the study area

1. demographic characteristics and trends
2. composition of economic activity
3. changes in the composition of activity over time
4. analysis of the level of economic activity by industries
5. dynamic properties during previous business cycles
6. future prospects

B. Forecast the future level of employment by occupations - 3 to 5 year time horizon

1. obtain the O.I.D.S. projections for the study area
2. examine the O.I.D.S. industrial employment and occupational employment projections for consistency and "reasonableness" given the profile

C. Relate the occupational projections to VTE program codes

1. use the B.L.S. (1975) crosswalk to relate the occupational projections to VTE program codes
2. enter current VTE enrollment at the terminal level into the crosswalk table
3. project future VTE output by program codes based upon numbers of lower level students and a time trend
4. analyze VTE output in relation to projected employment levels and in light of placement performance

II. VTE Delivery System

A. Analyze the VTE delivery system

1. gather data on VTE program enrollments and costs
2. analyze the composition of VTE program offerings in light of the labor market analysis
3. examine VTE program cost data
4. examine the placement and follow up data

B. Conduct the fieldwork

*see Appendix C for a description of the methodology

Appendix C

Field Work Methodology

The field work was conducted by, first, contacting the director of VTE in each of the four school districts and the dean or director of VTE in each of the four community colleges. Copies of Phase One of our report were sent to each. A meeting was arranged between each of the directors or deans and the three project investigators. At the initial meeting we introduced ourselves and our project, described its purpose and scope, and discussed the type of information that would be generated when the methodology is implemented.

We requested permission to visit a representative cross-section of schools, vocational-technical centers and community college campuses, and to conduct field work at these sites. The director or dean generally recommended a number of facilities to visit, and either personally contacted administration personnel at each site to advise them of our project, or supplied us with their names. In all cases, more facilities were suggested than we were feasibly able to visit, given the constraints of staff, time and scope of our project.

Finally, we asked the VTE directors and deans a number of questions concerning the operation of VTE programs in their area. A structured but flexible questionnaire was employed, and is show below.

Questionnaire for VTE Administrators

1. What do you see as the role of VTE within the educational system? How should it be coordinated with academic programs?
2. How do you view the coordinating council? Advisory committees? Are yours active? How often do they meet? Do they include "lay" members? Can you supply us with a list of members?
3. Describe the process for program planning. Does it work well? How much flexibility do you have in implementing new programs and deleting obsolete ones?

4. How much coordination do you have with the school system (the community college)? CETA? The State Employment Service? The University of South Florida? Other school systems/community colleges?
5. What are your funding problems? Is there "skimming" in the system? Are supplies adequately funded?
6. Are your facilities and equipment adequate? Can you replace depreciated equipment?
7. How would you rate the quality of your faculty?
8. Are student needs being met? Is there "dumping" of problem students into VTE?
9. Are there programs for bilingual students? Handicapped students?
10. Are there policies for changing the traditional male/female identification with given occupations?
11. What are your biggest needs as administrators?
12. Do you have any comments on Phase One of our report?

Visits to Sites

The visits to high schools, area vocational-technical centers, and community college campuses were conducted by one of the investigators. At each site he initially met with the principal, director or administrator in charge of VTE. Administrators we questioned using essentially the same questionnaire as above.

Next we toured the facilities, speaking to faculty and students. Below are the questionnaires employed for each.

Questionnaire for VTE Faculty

1. What classes do you teach? How long have you been teaching?
2. What is your educational background? Previous experience and training?
3. How is the quality of the facilities and equipment you use?
4. Do you have funding problems? Are your supply needs met? Is there "skimming" of VTE funds at school administration levels?

5. How is the quality of your students? Do you have problems with "dumping"? With bilingual students? With handicapped students?
6. How is the placement of program graduates handled? Are you involved in placement? Is the occupational specialist of help?
7. Do you have advisory (craft) committees? Are they active? Useful?
8. What are your biggest needs as teachers?

Questionnaire for VTE Students

1. What vocational program/classes are you in?
2. Why are you in this program? How did you initially find out about it and become interested in it?
3. Have you had any vocational or occupational counseling? Was it useful?
4. How is the quality of the facilities and of your teachers? Your fellow students?
5. How do you view your job prospects when you graduate? Do you have any job prospects now? Where will you get job information and placement help?

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